SCREENING FOR CERVICAL CANCER

AN EVALUATION OF THREE DIFFERENT METHODS OF RECRUITMENT AMONG WOMEN BETWEEN THE AGES OF 40 AND 64

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ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
AHA	Area Health Authority
CGC	Committee on Gynæcological Cytology
CIN	Cervical Intraepithelial Neoplasia
DHA	District Health Authority
DHSS	Dept. Health & Social Security
FHSA(s)	Family Health Service Authority(s)
GP(s)	General Practitioner(s)
HIV	Human Immuno-Deficiency Virus
NHS	National Health Service
NHSCR	National Health Service Central Register
PNL(s)	Prior Notification List(s)
RTR	Richmond, Twickenham & Roehampton (Health District)
WSNEH	West Surrey, North East Hampshire (Health District)

CHAPTER 1
ABSTRACT

AIM OF PROJECT

To evaluate the effectiveness of three different methods of recruitment for routine cervical cytology among women aged, primarily, 40-64 years. The recruitment drives took place between 1985 and 1987 across three separate Health Districts within the South West Thames Regional Health Authority.

COMPUTERISED CALL & RECALL

During the year of the evaluation 8221 letters were issued to healthy women in the target age-range. While 38% of these invitations resulted in screening taking place, over half of the cervical smears done were unwarranted as they were performed on asymptomatic, adequately screened women. It was estimated that only 13% of invitations resulted in necessary screenings.

POSTER & LEAFLET ADVERTISING

Leaflets were delivered to 110,000 homes, and almost 400 posters were sited in prominent areas. But in 25 out of the 26 Wards which comprised the Health District no significant increase in attendance for cervical cytology was registered at the local clinics. Furthermore the advertising appeared to have no appreciable effect on the knowledge & attitudes of interviewees towards the subject. However, one probable consequence of the publicity campaign was that more women in the post-advertising sample were aware of the location of their nearest screening clinic.

INDUSTRIAL RECRUITMENT

When screening facilities were provided within the workplace, 91% of the workforce attended, more than half of whom required cytology. The detection of abnormal cytology was high, and over 50% of women with aberrant results were inadequately screened for cervical cancer. **BUT;-**

(a) It was possible to accurately estimate the population of women at risk for only 54% of the companies visited.

(b) Only 48% of companies approached agreed to allow a mobile caravan to visit.

(c) This method of recruitment was the most expensive, averaging £15 per head

(d) At best workplace screening could reach between only 20-25% of eligible women, & probably less in other, not so industrialised, Health Districts.

(e) To ensure future compliance this type of service would need to be repeated at regular intervals - a cost that could not be met solely from the Health District budget.

PROBLEMS RELATED TO THE ADVERTISING STUDY

While the poster won four major awards and was highly acclaimed within the media world, it was impossible to tell how many of the target population read, or even saw, the advertising material. Just over 1 in 3 women interviewed subsequent to the publicity campaign could recall the leaflet &/or poster, and only 1 in 10 could correctly recall any information contained therein.

However, the biggest omission was the failure to assess, by means of pilot studies, the winning design for (1) visual effectiveness; (2) its potential to recruit women for cervical cytology; and (3) the understanding of the target group with regard to message content.

This latter point is especially valid since it is believed that the degree of illiteracy within the target age-range was greatly underestimated. These factors may well have resulted in a poster that was inappropriate for the women it was intended to recruit.

If all professional involvement had been paid for, the advertising campaign would have cost in excess of £25,000. While this is not a frugal use of funds for one Health District in isolation, a country-wide campaign would be more economically viable, and could well prove to be a useful adjunct to the computerised call and recall.

PROBLEMS RELATED TO THE COMPUTERISED CALL & RECALL STUDY

This method of recruitment would, within five years, have achieved almost entire adult female population coverage. But across all the 18574 invitations issued to all women aged 20+: -

(a) 59% were issued to women whose previous screening history was unknown & indeterminable. It is not unreasonable to assume that some of this group would be adequately screened and would, therefore, ignore an invitation as inappropriate.

(b) 29% went to women who were found to have received cervical cytology within the preceding five years.

(c) A further 12% were issued with an invitation against the advice of their family doctor.

These problems resulted primarily from poor record keeping. The family doctors' failed to include relevant information on the Prior Notification Lists (only 47% were returned to Family Health Service Authorities with relevant details included), and their case-note records of cervical smears were often poorly maintained when compared to those held by the cytopathology laboratories. The computerised details of screening & medical status held by the Family Health Service Authorities were often wrong and, despite extensive upgrading prior to computerisation, demographic inaccuracies (particularly name & address but also age & sex) were common.

It is also possible that the aforementioned subject of illiteracy could have contributed to the low response rate since the choice of the letter of invitation was decided by 'Health Experts', and the missive selected was not piloted for effect or comprehension on the target population.

The computerised call and recall has now been implemented across the country. However, its true effectiveness can only be judged when the population registers of the Family Health Service Authorities are adequately maintained.

THE GP CASE NOTE REVIEW STUDY

In order to determine whether any of the three aforementioned projects caused a significant increase in the overall screening coverage within each Health District, two separate case note reviews were undertaken. The first of these occurred in the year preceding the interventions and the second upon completion of the projects. A fourth Health District with no organised screening policy was used as a control.

85% of eligible General Practitioners agreed to be involved and over 4500 women aged 40-64 years were selected from their lists held by the Family Health Service

Authorities. The screening histories of 3756 women were cross-checked with the records held by the 15 cytopathology laboratories supplying the four Health Districts. Information was obtained from this source for over 40% of the women investigated.

No significant alterations in screening patterns were noted across any of the Districts as a consequence of the interventions. But, due to sampling error and various other factors, the case-note review cannot be seen as an adequate reflection of the success or failure of the recruitment drives.

COMMENT

Although this work is unable to champion one single method of recruitment for cervical cytology, it has nevertheless highlighted other relevant considerations. Foremost among these is a credible estimation of screening history. Across all Health Districts and interventions it was consistently shown that between 30% to 40% of women in the age-range 40-64 years were inadequately screened for cancer of the *cervix uteri.*

Secondly, this study has gone some way to validate the use of housing tenure as an indicator of deprivation and poor screening attendances. At the time under scrutiny, only 1 in 5 women residing in council housing were regularly seeking cervical cytology compared to 1 in 3 who were either living in their own homes or renting in the private sector. Furthermore it must be emphasised that the social conditions reflected in this treatise were not common to the rest of the country. Indeed, this work took place in areas that were, on average, among the most affluent in the United Kingdom & where council housing formed just 15% of the total housing market. The concurrent national percentage of local authority tenants was around 30%. Although home ownership has subsequently increased, in 1990 the number of people resident in local authority housing was still significant and roughly equivalent in size to Social Classes IV and V combined. Thus it remains an important area where specific interventions can be targeted.

SUMMARY

There is always going to be a hardcore of women who will never be persuaded to seek screening and no one method of recruitment will work for all women. The work showed that the age-group 50+ years is the most intangible and their right to remain unscreened must be respected - provided their decision is an informed one. Thus,

the role of education in this subject must not be neglected although advertising in isolation is not seen as a viable educator for women from the least advantaged social classes.

The problem with the older women being reluctant to undergo screening should become less acute with time. Younger women are more familiar with cytology examinations and should be called regularly through the GP call/recall scheme, although errors and omissions will continue to occur. As a consequence other methods of recruitment should not be ignored but more studies involving psychological factors are necessary to determine which of these are the most effective.

CHAPTER 2
INTRODUCTION

2.1 Incidence of Cervical Cancer

Each year four thousand women in England and Wales develop cancer of the *cervix uteri*, and nearly two thousand die of the disease [1]. Overall, 72% of all cases and nearly 90% of all deaths occur in women over the age of 40 years, with the peak incidence occurring in the age group 55 to 64 years [2].

Older women appear to be reluctant to attend for cytological screening [3-15], perhaps as a consequence of ignorance [16]. But, irrespective of age, the incidence of cervical cancer is greater among women classified as Social Classes IV and V [8,17-31], and among those women who are widowed or divorced, or who have had three or more children [27,32-34]. Unfortunately these groups, along with working women, are among the least likely to seek screening [5,9-11,33,35-40].

Furthermore, there is a marked regional variation with the South East and South West Thames regions (the latter being the area where this research was undertaken) having the lowest Standardised Mortality Ratios in the country - 84 compared with a national average of 100 [41].

2.2 History of Cervical Cytology & Development of Screening Programs

Although it has been postulated since the turn of the century that the natural course of cervical carcinoma includes a pre-cancerous stage [42,43], it wasn't until 1943 that the procedure of using exfoliative cytology to detect pre-cancerous cells on the neck of the womb was developed [44]. But it took until 1966 for the cervical smear test to be considered for routine population screening on a national basis [45] and, even then, no randomised controlled study was carried out to determine the effectiveness of cervical screening on the general population.

During the mid 1960's the then Ministry of Health issued circulars regarding the establishment of cervical screening and provided money for the training of cyto-screeners. It also set up an advisory Committee on Gynæcological Cytology (CGC) and collected national statistics from the laboratories. However, no centralised attempt to recruit women for screening occurred until the establishment of the National Health Service Cervical Cytology Recall Scheme in 1971 [46]. Under this, the National Health Service Central Register (NHSCR) at Southport was given the

responsibility to undertake five yearly recall for cervical cytology screening, covering women over 35 years of age who had no history of cervical irregularities. In other words, concentrating on women least at risk by virtue of their already having attended for screening, and known not to be in danger of contracting the disease! For those women with abnormal results, the doctors initiating the call accepted responsibility for adequate follow up.

The recall was initiated by means of the standard request/report/recall form (HMR/101/5) which had been introduced in 1966. This provided copies for the patient's GP, the person taking the smear, the laboratory, the local Health Authority and the NHSCR. This final copy was filed in date-name order and, after a five year period, triggered a notice calling the woman for re-examination. While checking was undertaken to ensure that the women had not died or moved to another FHSA, for a woman to have a second smear as a result of this system, the form needed to be sufficiently legible; it must have avoided being lost or misfiled; the woman concerned must not have moved house; and she must decide to attend when she received the notice. Furthermore, no register was kept of the participating women and once recall had been initiated, there was no record of a woman's existence [47]. Thus, it was not possible to measure the number of repeat examinations, nor could the system link one smear with another to give an indication of the number of women who had been screened.

The Southport scheme was established as a result of political pressures but in operational terms was never taken seriously [47]. This was demonstrated by the way it determined the rates of abnormal smears. "'Positive' rates were calculated from numerators and denominators obtained from two different sources - the laboratories providing the numerators and Southport providing the denominators. The denominators were based on small samples and were estimated by measuring the thicknesses of heaps of paper with a ruler (pressing down to compensate for the paper-clips)" [47 p364].

During this time, the CGC recommended the taking of smears as part of the normal medical care of women attending antenatal and family planning clinics, as well as by GPs. It also advised that the Southport scheme should be replaced by local schemes of repeated call and recall using contiguous population registers and based on computer systems.

Two years later, the eligibility criteria of the NHSCR recall scheme was extended to include all women who had had three or more pregnancies, irrespective of the duration of the pregnancy [48].

In April 1981 a 'consultative' Health Notice [49] was distributed and, although this was issued purely as a discussion document seeking comments regarding a proposed change in the cervical cytology arrangements, it made clear that the NHSCR recall scheme was to be disbanded. The reason given for this dissolution was that the recall scheme was unsatisfactory. It was a manual system with a response rate of less than 20%, and it has been estimated that as little as 4% of smears resulted in appropriate recall [50]. There was no co-ordinating mechanism for its development and management, and no way of monitoring its effectiveness. In addition it was a recall scheme only, and therefore dependent on women having already entered the system; it had no means of initiating direct call.

Subsequent to the dissolution of the Southport recall scheme, the onus for screening recall fell onto the local DHAs [51]. They had to assume responsibility for running whatever type of system best suited local needs and could be paid for from available resources. This system was to be established by 1st April 1983 but, in mid 1985, 20% of the Districts had no recall scheme in operation [52].

Concurrently, the DHSS funded Family Practitioner Services Computer Unit at Exeter was developing a call and recall scheme that could be integrated into computerised FHSA registration. In 1983, one FHSA in each Region was offered the hardware, installation costs and maintenance for three years, provided the DHA involved agreed to contribute about £3000 [53].

Despite the fact that this system was not adequately evaluated, the DHSS instructed all Health Authorities to establish such a call/recall system by April 1988, stipulating that women aged between 20 and 65 should be invited for cervical screening at least once every five years.

In April 1988 the DHSS issued a press release (88/117). This stated that every English FHSA had its register computerised and all but nine of the 190 English District Health Authorities had their screening systems underway. Computers had been installed at 65 individual sites, more than 750 display terminals had been established and over 33 million clerical records had been converted. The cost was £10 million.

Up until this time, what little impact screening had on the incidence of cervical cancer in England and Wales [54,55] resulted from the plethora of small scale recruitment innovations that have emerged since the mid 1960's. These varied not only between the two countries, but from one DHA to another within each country and even from

individual clinicians. In view of this lack of organised effort, it is hardly surprising that between 60% to 90% of the women with the invasive stage of the disease have never had a cervical smear [56-61].

However, there is a wealth of evidence from other countries which indicates that a well organised screening programme can substantially reduce the mortality from invasive carcinoma of the *cervix uteri* [29,62-74]. But, how have women come to be screened?

2.3 Methods of Recruitment

Over the last 25 years, women have entered the screening system in one of three ways;

(1) As an adjunct to another procedure (opportunistic entry).

(2) Being issued with an invitation.

(3) Seeking the service for themselves.

It has been estimated that 61% of women are first screened as an supplement to another examination, while 9% are recruited by their GP or local DHA clinic and 30% seek the service for themselves [75].

2.3.1 Opportunistic Entry

Opportunistic screening for cervical cancer exists during pregnancy, family planning (contraceptive provision; infertility clinics; termination of pregnancy) and during attendance for gynæcological symptoms. Other opportunities also exist, particularly for the GP, in routine consultation regarding other health matters. However, older women are the most likely to miss out on screening undertaken in Family Planning or Ante-natal Clinics, and consequently be omitted from any recall schemes that have been established. Even when these women do present in situations where cervical cytology could be offered, those who are most in need of the service by virtue of never having been screened are the least likely to be recruited [76]. Studies have shown that between 15% and 37% of women with invasive carcinoma who had not been screened for an interval greater than five years, had consulted a practitioner on obstetric or gynæcological matters within the five years preceding diagnosis of the disease [59,60].

Indeed, it appears that many women will only seek cytology if they are symptomatic [33,77], particularly those most at risk of contracting the disease [38]. But asymptomatic screening is important since 6.2 cases of in situ carcinoma and 0.4 cases of the invasive disease are detected in every 1000 symptom free women screened [56], and even one smear can offer a substantial degree of protection [69,78-80].

But, while one smear is obviously better than none, maximum protection can only be given by regular screenings. It has been estimated [81] that quinquennial screening between the ages of 20 and 64 years will result in an 84% reduction in the rate of cervical cancer for the cost of nine smears per woman. An interval of three years between smears would raise the reduction in rate to 91%, but would increase the number of smears taken per woman to fifteen. If annual screening was implemented, this would only reduce the rate of carcinoma of the *cervix uteri* by a further 2% to 93.3%. However, the number of smears taken would increase dramatically to forty-four smears for each woman reaching the age of 65 years.

Across the duration of the work reported here, the government based screening limits were for quinquennial smears for every woman aged over 35 and those under 35 who had been pregnant on three or more occasions [82]. However, a large amount of non-essential screening was occurring in young women who were receiving cytology at unnecessarily frequent intervals, particularly those seeking family planning. [83]. Indeed, during 1984, 55% of all cervical smear tests were taken from women under the age of 35, with the 20-24 age-group being the most intensively screened of all [84].

While opportunistic screening fails to catch those women most at need, there is also evidence to suggest that if women are screened as an routine adjunct to some other procedure, then many could be unaware of ever having received cervical cytology [16,39]. Furthermore, if those women who were aware of having been screened find the experience to be embarrassing, unpleasant or painful, active participation could be discouraged [85,86].

2.3.2 Invited Entry

Tables 2.1 to 2.3 show a synopsis of published data detailing the results of inviting women to attend for cervical screening. The range of response varies from 14% to 88%, and while the studies cannot be directly compared because of differences in age ranges, selection methods and venues as to where the service would be performed, two factors emerge;

(1) There is a marked discrepancy between the number of women initially selected for call and those who are subsequently judged eligible for screening. The majority of these differences are due to errors in the population registers held by either GPs or FHSAs.

(2) In all cases where personal contact with some authority figure is recorded (usually nurse, Health Visitor or doctor) the response rates are far higher than for the invitation in isolation.

Table 2.3 shows a breakdown of response when screening is offered in the woman's workplace. Although the number of these studies are small, the response rate is generally higher than the response to the GP or area based schemes. While this appears to indicate that workplace screening is more effective than other methods of recruitment, additional factors such as a more accurate estimate of the population of women at risk must also play a part.

2.3.3 Self Entry

This way of entering the screening system is probably the most effective since there is evidence to suggest that if an individual can attribute an attitude change to herself as opposed to some external agent (being screened as an adjunct to some other examination or being invited to attend), then the modification in her behaviour is likely to be more permanent [107,108]. Overall, women in Social Classes I & II appear to be more likely to seek the service for themselves [109], but what prompts a woman to seek the service on her own volition?

2.4 Factors Influencing Screening Uptake

Non-compliance towards screening programs is usually attributed to the patient's ignorance, or at least to his or her irrational attachment to certain mistaken beliefs about disease and treatment [110]. However, one particular theory which attempts to explain why individuals take part in health promoting actions - the Health Belief Model [111,112] - stipulates that in order for such participation to occur, a person has to;

(1) be concerned about health matters;

(2) see themselves as vulnerable to contracting the disease;

(3) believe the disease to be of a potentially serious nature;

(4) believe that the disease is curable or preventable;

(5) see the screening or treatment as unlikely to cause any harm;

(6) be responsive to methods of recruitment.

To be concerned about an issue and to view oneself at risk of contracting a serious disease, pre-supposes a level of knowledge about the subject in question. In the main, people obtain their information either through the mass media or through social communication.

2.4.1 Advertising and Media Influences

Advertising as a means of imparting health missives with a view to promoting behaviour change is not new and has been used since at least 1829 [113]. Indeed many of the slogans that are used today are derived from older campaigns. For example, the familiar slogan "Don't drink and drive" was first used by the National Safety Council during the 1930's [114].

Mass media can be divided into two main categories; (i) television/radio and (ii) texts. There is, however, a considerable doubt over the effectiveness of either of these in promoting health education [115-125], and this scepticism is best highlighted by the paradox that television presents. While planned persuasive television campaigns appear to have little or negligible effect on public health [126-133], television per se can be an unintentional potent factor for both good and bad [123,134,135]. For example, when the detective 'Kojak' gave up smoking, there was evidence of a considerable 'copy-cat' effect within the community [136]. In a negative vein, one Health District reported a 300% increase in the number of overdoses following an episode when Angie, a character from the soap opera 'East Enders' attempted suicide in this manner [137].

The use of television advertising in health promotion has also been known to create the opposite effect to that intended. One such case was the denunciation of psychedelic drugs in the 1960's which served only to glamorise the use of LSD, and seemingly led to an increase in experimentation among young people [138,139].

Advertising through the use of such printed media as posters and leaflets is another way of communicating information. Posters can be an effective means of conveying a single message to a large population, but only if they are visually appealing and located in the right places. They also become dog-eared and faded within a relatively short space of time, thus reducing the credibility of the message contained. Nevertheless, some studies have found them to be more effective in recruiting women for cervical cytology than either newspaper publicity or leaflets [93]. Leaflets,

however, do have certain advantages over posters. They can contain more information and be kept for referral, but depend on people picking them up and reading them.

Posters have the same disadvantage in that they need to be perused and both media beg the question of what persuades an individual to read the information they contain. In one study, seven posters on various health subjects were all displayed in eight Health Centres. It was found that 35% of the women interviewed on leaving these clinics had not registered the presence of any posters at all, and only 26% had seen the two cytology posters [140]. In another experiment, one poster with accompanying leaflets about cervical cytology was placed in a waiting room at a Health Centre. Only 3% of the women waiting could later recall the information it contained and only 1% had taken a leaflet [141].

Even among motivated women (in this case mothers attending a pre-school clinic), more than half did not register the presence of a poster advocating immunization against measles and, of those who had seen it, over 20% were unable to correctly remember the messages contained [142].

There is evidence which suggests that people seek out information which is consonant with their existing attitudes, beliefs and behaviours [143-145], and it is not unreasonable to assume that women who receive regular smears are more likely to be receptive to messages about screening than their counterparts who have never had cytology. The corollary of this suggests that if a woman does not believe that the poster/leaflet is relevant to her, she will not read it.

Estimating the effect of poster and leaflet advertising in recruiting women for cervical cytology is difficult, since it is usually impossible to determine the exact number of at risk women reached. However, one study [146] found that leaflets alone caused 2% of at risk women to seek screening, but leaflets in conjunction with posters and press publicity raised the number screened to 7%. But, when house visits were employed, that number more than doubled (15.5%).

Another study has shown that although advertising might not persuade women to seek cytology, over 33% of women first heard about cervical cytology through the media. However, this method of gaining knowledge was more common among Social Classes I and II [75], and among those women who had never been screened [147].

The ethos of numerous publicity drives over the last twenty years have been to assume that an increase in knowledge alone is sufficient to affect attitudes which, in turn, predicts subsequent behaviour [134,139,148-151]. Certainly there is a school of thought which holds that knowledge leads firstly to changed beliefs *, then attitudes ** and finally to behaviour modification [116]. However, there is also evidence to suggest that attitudes are not always the precursors of behaviour [152-155]. Thus, it is conceivable that advertising and the presentation of knowledge in other forms might well raise levels of awareness but this, in itself, is not enough to initiate action [156,157]. In addition, beliefs can be formed in other ways than by the presentation of information. For example, through direct experience ('descriptive beliefs'), or through inferences based on previously learned experiences, or through formal coding systems [158-160] ***.

The distinction between inferential and descriptive beliefs is somewhat arbitrary, and it is possible to view beliefs as forming a continuum between the two. At the descriptive end a person's beliefs are tied directly to the stimulus situation whereas, at the extreme inferential end, beliefs may be entirely self-generated. However, most beliefs are formed not just on the basis of direct experience nor by way of the inferential process, or information presented, but result from a combination of all three factors [161-165].

These findings suggest that in order for advertising to be successful, it must reach the target audience and arrest their attention [116]. It must ask for active participation from these individuals and offer explicit ways to change. But, a woman's behaviour is also motivated by her expectations about the consequences of her actions [166-170]. Therefore, if a woman views cervical cytology as a 'cancer test' [16,171,172] she will not willingly seek the service, since she expects the outcome of the test to be the diagnosis of cancer [16]. If, however, she understands that the test will determine a pre-cancerous, easily curable condition, then she will be more likely to attend for screening [100,173,174].

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* "belief is a probability judgement that links some object or some concept to some attribute....The content of the belief is defined as the person's subjective probability that the object-attribute relationship exists (or is true)". Fishbein M. Persuasive communication. In (ed) Bennett AE. *Communication Between Doctors and Patients*. Oxford University Press, 1976.

** "...an attitude (refers) solely to a person's location on a bipolar evaluative or affective dimension...(it) represents a person's general feeling or favourableness or unfavourableness toward some stimulus object...". Fishbein M, Ajzen I. *Belief, Attitude, Intention and Behaviour*. Addison-Wesley, Reading, Mass: 1975.

*** For example, A is taller than B who is taller than C; therefore, A is taller than C.

So, in order to get women to respond favourably to screening invitations the preventive aspect of the disease needs to be emphasised, as does the woman's susceptibility to the condition. In addition, any communication which attempts to alter attitudes and change health behaviour must, firstly, create a motive to change and, secondly, offer a clear concise course of action to facilitate moving from a change in attitude to a change in behaviour [175]. But pointing out the consequences of non-attendance in graphic detail can be counter-productive since it stimulates the psychological mechanisms of fear arousal and denial [175-185]. Indeed, some studies have shown that non-attenders saw cervical cancer as more serious (i.e. invariably fatal) than women who attended for screening [88,100].

Thus, high levels of fear in health education can be counterproductive, although there is evidence to suggest that such a state of arousal, when ameliorated by another emotion such as humour, can be effective [186]. Similarly, high levels of fear used in conjunction with an appeal to protect vulnerable loved ones have been successful in some anti-smoking campaigns [187].

Nevertheless, irrespective of the level of arousal created by the publicity medium, some degree of fear is necessary to initiate action [179] with lesser rather than greater levels seeming to be the most effective [188].

In addition, socio-economic and educational levels must be taken into account when devising informative material. Thus, any information must be based on a clear understanding of the perceptions of the target group [189,190]. Furthermore, since any message about health invariably results in awareness of sickness, to present factual information without any attempt to dispel any misgivings will not persuade women, particularly those in the lower social classes, to attend for screening [9,191].

2.4.2 Peer Pressure

The presentation of information is, obviously, necessary to persuade an individual to engage in health promoting activities, but the source of the information is, in itself, an important factor. Role models are influential (e.g. Kojak), but immediate family or peer group, or even specially selected 'opinion leaders' [191,192] can be more persuasive than media personalities or medical personnel. It is postulated that the higher the degree of empathy between the sender and the receiver of the innovation in question, the greater the likelihood of change on the part of the latter [115]. The influence that such 'important others' have allows for modelling (learning a behaviour after observing others who they wish to emulate) [166-168,193,194], vicarious reinforcement (observing the rewards gained by others), and public and personal

commitment. This effect is particularly marked if the individual can be persuaded to make a public statement of intent, then she is more likely to carry through the proposed action [195]. Furthermore, personal contact and support is important in the maintenance of behaviour change [196].

Between 11% and 31% of women are estimated to gain information about cervical cytology through personal contact [147], although this method of acquiring knowledge was more common among women in Social Classes IV and V [75].

2.4.3 Role of General Practitioners

GPs take about half of all smears [4] and, it has been argued, they have a pivotal role to play in the recruitment of women for cervical cytology by means of their contact with patients. This applies particularly to the high risk group, for whom the practitioner has an opportunity for persuasion which will be all the greater due to his/her special authority and status [75]. It is also maintained that they are the best placed to overcome the patient's anxiety and alleviate her fears [5]. However, these assumptions have been questioned particularly with regard to their contact with high risk patients [40,197]. Furthermore, it appears that family doctors are not very successful in educating women about the preventive nature of cervical cytology [72] since, when women had been informed that a smear had been taken, cancer prevention was rarely mentioned [198]. This was particularly true among the older doctors, who were also less likely to undertake routine screening [199]. Similarly, GPs working single-handed are less likely to take smears than colleagues working in a practice [199].

The implication of this is that many women will follow their doctors' advice with trust and confidence which, in return, inhibits questioning. Thus, many women may well be unaware of the implications of cervical cytology and may only attend at the specific instruction of their GP.

2.4.4 Mobile Clinics

Mobile caravans have one distinct advantage over the conventional screening facilities; that is, they can be situated in specific areas of high risk, within an industrial complex or in scattered rural communities. In addition, many operate on the 'walk in' principle, thus removing the appointment barrier which serves as a disincentive to many women [200]. However, the response to these clinics are difficult to assess since the actual population of at risk women is often a matter for extrapolation and speculation, and very often the only given criteria for success is the detection rate of abnormal smears.

While, however, they do appear to be effective in recruiting those women who have never had cytology [201], it seems that they fail to attract women in the lower social classes [202]. Nevertheless, the informal atmosphere of the caravan does appear to encourage women to bring along their peer group or members of their family [39].

2.4.5 Female Practitioners

Modesty has already been mentioned as a factor in influencing the decision to attend for cytology, with 90% of non-responders in one study citing embarrassment or fear as the reason why women did not seek re-screening [39]. This view is particularly prevalent among the older or unmarried women who do not like the idea of being examined by a male practitioner. Among this group, the response to a female doctor is more positive [35,39,98,203], particularly when the procedure is carried out in a specialist well women clinic [198,204]. Overall, female GPs do tend to see more women patients, particularly for cervical smears, contraceptive advice and breast disorders [205].

2.4.6 Social Class & Other Measures of Deprivation

Many of the above studies cite social class as a contributory factor in both the incidence of cervical cancer and in the uptake of preventive screening measures. However, social class is a contentious issue since, invariably, it is based on occupation classified on a hierarchically ordered scale. Thus, at the top of the scale are those jobs which require higher education. In the middle are the occupations for which training is necessary, while bottom of the hierarchy is work which requires neither education nor training. In view of this, it would be reasonable to expect that other factors associated with training and education would also be associated with social class. For example, income is generally related to higher status occupations. However, income is also related to health [206] since better pay means the ability to procure better food and accommodation, while superior education gives people the ability to utilise better the health and social services [207]. Thus, it comes as no surprise to find that the affluent well educated individuals do benefit more than the poor and uneducated, and that there are marked differences in mortality rates between the non-deprived Social Classes I/II and the deprived Social Classes IV/V [208] and the unemployed [209,210].

While there are opponents of the social class classification who argue that it should be abandoned for scientific purposes [211] it is, nevertheless, one of the most widely used variables in socio-medical research [212]. But, there is also evidence which suggests that social class derived by occupation is associated with distinct behaviour

patterns [213]. It also seems to be a good indicator of deprivation [214], and the notion that there are generalised patterns of health disadvantage within the lower social classes is gaining increasing credence [215-219].

Thus, while social class per se does have some place in epidemiological research, the notion that it is easy to collect and simple to use is fallacious [220]. The difficulties in collecting such data are numerous. For example;

(1) Data entry error - punching and coding mistakes.

(2) Recording errors - the occupational statement may be so vague as to preclude classification.

(3) Unqualified statements - e.g. 'mechanic' can relate to several occupations each of which is classified differently.

(4) Errors of omission - i.e. the failure to report status (e.g. foreman or manager) within any given occupation affects classification.

(5) Conversely the over-reporting of status is also not uncommon.

(6) The current occupation of an individual, particularly in today's economic climate may not reflect his/her true occupational or educational status.

Additional problems are that most classifications are based on occupation of the head of household and, while single, widowed and divorced women have been classified by their own occupations since the 1930's, non-working married women are often classified, for research purposes, to their husband's social class. Furthermore, although over half of all married women are economically active, many take convenient jobs to fit in with family commitments that are not commensurate with their educational attainments and previous economic status [221,222].

As cervical cancer is confined entirely to women, for whom details of social class could not be assumed to be readily available, some other measure of measuring deprivation appears to be necessary.

Such a measure could well be housing as poor living conditions have been widely reported to be implicated in higher than average mortality rates [223,224]. Furthermore, standardised mortality ratios among individuals resident in local authority housing have been shown be higher than among their counterparts living in the private sector [225,226] *.

* Throughout this document the term 'private sector' includes private rented accomodation (both furnished & unfurnished) abd owner-occupied.

Additional evidence for these findings has been demonstrated by a breakdown of the 1971-1975 incidence rates for carcinoma of the *cervix uteri* among those women most at risk of contracting the disease by virtue of their age [227]. Table 2.4 shows that with regard to both carcinoma-in-situ and invasive cancer of the cervix, the Standardised Incidence Ratios are greater than those expected for women resident in local authority housing than for comparative females in any of the other three groups.

In addition, using local authority tenure as a means of identifying deprivation has several functional advantages:

(1) Local authority tenancies can be easily identified by readily obtainable housing lists.

(2) Coding is easy since it comprises two distinct categories.

(3) It overcomes the problem of upgrading or omission of status.

(4) It enables those individuals who are unclassifiable under the Registrar General's coding to be allocated to specific groups.

(5) It identifies specific areas for recruitment drives.

(6) It allows for direct comparisons and validations to be made to existing data that lists both address and socio-economic class as derived by one of the established scales.

2.5 Conclusion

Over the last 25 years most women have entered the screening system through chance, and it can be seen, that screening for cervical cancer in England has followed a haphazard and inefficient course with no coherent policy since its inception in the mid 1960's. Despite the fact that over 25 million smears have been taken over this time, when compared with the coverage obtained in other countries, the United Kingdom screening service must be regarded as a relative failure. While the service is generally available it has had little impact on those who most require screening - women over the age of 40 years, particularly those in the less skilled social classes.

Table of Tables

Table 2.1: RESPONSE TO CALL
Comparison between various GP Schemes

Author	Ref	Venue	Selected			Eligible		Personal Contact	
			Age Range	No.	Response Rate	No.	Response Rate	Y/N	Response Rate
Newmark	87	GP	35–50	328		304		Yes	78%
Houghton	88	GP			70%				
Scaife	89	GP	35–51	890		678	25%	Yes	88%
Semmence	90	GP			51%				
Nathoo	91	GP	35–60 (1)			58	14%	Yes	42%
Wilson	92	GP	45–65 (2)	250		240	40%		
Dixon	93	H/C (3)	25–64	2082	81%	1105	82%	Yes	
Plaut	94	GP	20–65	613		417	81%	Yes	
Spenser	40	GP	25–60	77	44%			Yes	62%
Collinson	95	GP	35–60	566		393	67%	Yes	79%
Jackson	96	GP	40–70	5499		2901	6%		
Standing	97	GP	16–64	588		459		Yes	96%

(1) FPC Call & Recall
(2) No Record of Previous Cytology
(3) H/C = Home / Clinic

Table 2.2: RESPONSE TO CALL
Comparison based on Geographical Area

Author	Ref	Venue	Selected			Eligible		Personal Contact	
			Age Range	No.	Response Rate	No.	Response Rate	Y/N	Response Rate
Saunders	98	Clinic	3 yr Recall	328	72%				
Sansom	99	Own Choice		1007	48%	405		Yes	66%
Carruthers	100	Clinic or GP			53%				
Cardiff	8	Clinic	Ever Married	96369		70869		Yes	65%
Hakama	101	Nurses Clinic	25–69		75%				
Kauppinen	33		35,40, 45,50	6569	75%				
Allman	102	Own Choice	5 yr Recall		41%	1105	64%	Yes	86%
Weston	103	Clinic or GP	35–70	29211		17517	58%		
Vuori	3	Clinic	35–55	8712	66%	6773	85%		

Table 2.3: RESPONSE TO CALL
Industrial Recruitment

Author	Ref	Venue	Selected			Eligible		Personal Contact	
			Age Range	No.	Response Rate	No.	Response Rate	Y/N	Response Rate
Miller	104	Work Clinic			77%				
Standen	105	Work Clinic			31–39%				
Thompson	106	Work Clinic			70–89%				

Table 2.4: Standardised Incidence Ratio by Housing Tenure, 1971–81

	Housing Tenure			
	Owner Occupier	Council Tenant	Private Rented	Chi Square
Cervix Uteri				
Observed	133.0	140.0	79.0	
Expected	184.6	104.3	63.2	30.6 **
SIR *	72	134	125	
Cervix in Situ				
Observed	120.0	147.0	62.0	
Expected	172.9	93.0	61.3	47.3 **
SIR *	69	158	101	

Source: Kogevinas E, Socio–demographic differences in cancer survival 1971–83 LS Series no.5. London HMSO (1990)

* Standardised Incidence Ratio

** $p<0.01$

CHAPTER 3
AIMS OF STUDY

Prior to the widespread introduction of the FHSA based computerised call and recall system, this study was undertaken to compare three methods of recruitment for cervical cytology for the age-group 40-64 years,

The three methods under review are;

(1) the government instigated computerised call and recall scheme * ;

(2) advertising by means of posters and leaflets;

(3) screening offered within the workplace.

Each means of recruitment took place within a separate Health District within the South West Thames Regional Health Authority. A fourth Health District acted as a control where no intervention took place.

A further study was also established across all four participating Health Districts to measure the screening history of a random sample of women before the interventions and again one year later.

To allow for clarity, each recruitment method is described and reported in isolation. A comparison of the efficacy of the methods is outlined in the general discussion.

* Due to the importance of this scheme, the call and recall of all women selected to receive an invitation is reported irrespective of age. However, the relevent facts pertaining to the age-group 40-64 years are also quoted & used as a comparison of the effectiveness of the recruitment methods in the General Discussion (Ch 9) and the Summary (Ch1).

CHAPTER 4
METHODOLOGY

4.1 Selection of Health Districts & Patient Classification

The Health Districts were self selected in respect of their policy for recruiting women for screening. Croydon had already received funding for the computerisation of the FHSA records. RTR had an enthusiastic Health Education team who were proposing to use advertising as a recruitment method for cervical cytology, and the District Medical Officer for WSNEH had already organised some small scale screening for women within industry. North West Surrey formed the control District where no organised policy was being implemented.

As a consequence the areas involved in this study were dissimilar in respect of many socio-demographic variables. Small Area Statistics from the 1981 Census were used to quantify these differences concentrating on women aged 40-64 and, overall, there was very little affinity between the four Districts. The two Surrey Health Districts were the more affluent, having a higher percentage of married, economically active, English women who were more likely to be home owners and of a higher social class than their counterparts in Croydon and RTR. They were also younger, with a higher proportion being aged 40-49 years.

One factor that was consistent across all the participating Health Districts was the distribution of socio-economic groupings in relation to housing. In all cases there were more Social Economic Groups 1 to 5.1 * resident in their own homes, while council tenants were over-represented in categories 7 to 12 and 17 ** ***. Lists of local authority tenure housing were obtained for each of the four Districts before and after the interventions and, where possible, the women were classified according to their housing characteristics.

In addition to classification by housing tenure, women were also coded according to their previous screening history into one of the following groups.

Regular Attenders those women who had received two or more smears at regular intervals during the last ten years, the most recent being within the last five years.

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* Professional/managerial.

** Manual/unskilled workers.

*** The detection of a correlation between owner occupier and high social class is not peculiar to this study. Indeed, these findings are in accordance with the national pattern.

New Recruits women who had had their first cervical smear within the last five years.

Lapsed Attenders women who had a history of cytology but had not been screened within the preceding five years.

Never Attenders those women who had never had a cervical smear.

Irregular Attenders women who had been screened on at least two occasions but at irregular intervals, longer than five years. In these instances the most recent smear was within the preceding five years.

Hysterectomies women who had undergone hysterectomy involving removal of the *cervix uteri*. The women who had undergone sub-total hysterectomies were treated as non-hysterectomies and classified to the above codings.

4.2 Pilot Studies

Two pilot studies were undertaken.

4.2.1 Case Note Review & Interview Study

This two-fold study determined;

(1) the method of selection of patients from the registers held by the FHSA.

(2) an estimate of the response rate from GPs and some indication of sample sizes that would be required.

(3) the format of the questionnaire to be distributed to all participating family doctors across the four Health Districts.

(4) the format of the questionnaire used to judge the effectiveness of the advertising campaign.

(5) the areas frequented by the at risk group which determined the positioning of the publicity posters and additional leaflets.

(6) that women resident in local authority tenure housing were of low social status and inadequately screened for cervical cytology.

(7) the attitudes and beliefs of the target population towards cervical cytology. In particular that embarrassment, fear and ignorance were crucial factors in not seeking screening. This work also offered a guide to the terminology that was best understood by the most at risk group.

These findings were incorporated in the design of both the advertising material and the computerised letter of invitation. They are reported in greater detail in Appendix A and, where pertinent, are referred to in Chapters 5 to 8.

4.2.2 The Effect of the 'Oxford Incident'

Between February and July 1985, there was extensive press coverage relating to a young Oxford woman who had died of cervical cancer some four years after having a severely dyskaryotic smear. She had not been informed of the abnormality which only came to light after she sought routine re-screening three years after the abnormal smear.

The media coverage resulted in an increased uptake in screening services across all four of the Health Districts involved in this work, and a subsequent backlog of smears for analysis at the cytopathology laboratories. This, in turn, forced a delay of between two and nine months in the start of the interventions. During this time, the second pilot study was undertaken in RTR Health District to quantify the effect of the adverse publicity.

Within RTR the number of smears taken from women aged 40-64 years rose from 27% of the total number of smears taken to just under 34% during the media publicity ($P = <0.001$). This increase, however, resulted mainly from those women aged 40-49 who were already regular attenders for screening. But, at this time, women between 40-64 years comprised 66% of the adult female population in RTR Health District. Thus, even during the height of the media coverage, only one third of all smears taken came from the two thirds of the female population who were known to be most at risk of contracting the disease. In view of this, it was decided to continue with the interventions although some difficulties in the analysis of the effectiveness of these were anticipated, particularly with regard to a comparison of uptake across the year preceding the interventions and over the year of the experiments. The full findings are presented in Appendix C.

4.3 Analysis of Data

The analysis of the data reported in this thesis was undertaken using the following software packages;

Interventions	Software used
Advertising interviews & case note review	SPSS-X Lotus 123 *
Computerised call & recall	DBase 3+ * Lotus 123 *
Industrial screening	Lotus 123 *

* Within these packages there was no provision for parametric/non-parametric statistical analysis and programs were written specifically for this work.

Additional 'small scale' analyses were done using the Hewlett Packard 11c and 41CV calculators.

The document text was compiled using 'Manuscript' and the tables and figures using 'Lotus 123' with 'Allways', and 'Freelance'.

CHAPTER 5
COMPUTERISED CALL AND RECALL

5.1 Summary - Total Sample

Following the computerisation of the records held by Croydon FHSA and the establishment of a cervical cytology call and recall scheme, 24590 individuals were selected for screening on the basis of age and previous cytological history between the months of September 1986 and August 1987.

6001 women were excluded from call as a result of information received from the family doctors. 44% of these women had had recent cytology; 7% had left the area, and a further 7% had undergone hysterectomy for an unrelated condition. It was impossible to determine the reason for exclusion in 10% of cases and a further 8% should have been, but were not, issued with an invitation.

15 men and 18574 women were invited to attend for screening; one of the former and 6960 (37%) of the latter complied. However, this acceptance rate is not a true indication of the success of the intervention since;

(a) No screening history was available for 10987 (59%) of the women selected to receive an invitation.

(b) A further 5324 (29%) of the women called had received negative cytology within the preceding five years and had no history of abnormal smears.

(c) In addition, 2148 (12%) women who were not eligible for a letter of invitation were inadvertently issued with one due to the late return of the PNLs. Over one-quarter of these women had had some degree of cervical abnormality, and a further 273 had undergone total hysterectomy for a benign condition.

The letters of invitation were most effective in recruiting women aged 30-44 years. Half of all the women who responded positively to call/recall were screened within the three months immediately following the issue of the letter of invitation, although women aged 40 or over were quicker to seek the service than the younger women. However, significantly more of the older women had not been screened for in excess of five years.

It was possible to determine an accurate screening history for 94% of the women who responded positively to the letters of invitation and who had no history of cervical abnormalities. 57% had been screened within the preceding five years, 17% had not received cytology for more than five years and 20% had never been screened. 62% of the 'lapsed attenders' and an estimated 17% of the 'never attenders' were screened subsequent to the issuing of the invitations.

Nevertheless, 59% of the smears resulting from the computerised letters of invitation were done on asymptomatic women, with no history of cervical abnormality, who had been screened within the preceding five years.

Across the 12 months examined, 870 women were found to have had cervical abnormalities which warranted repeat screening outside of the normal recall system. No record of follow up cytology was found for almost one-quarter of these, although the attendance was significantly higher among the women who were inadvertently issued with a computerised letter of invitation.

Women Aged 40-64 Years

8221 women in the target age range were issued with an invitation. 37% of those with no history of cervical abnormality subsequently attended for screening. Of these, 62% had received routine cytology within the preceding five years. Only 13% of the invitations resulted in a woman in need of cytology being screened.

An accurate screening history was determined for 96% of the women who responded positively to call. 13% had never been screened, and 22% had not received cytology for in excess of five years.

The relative failure of this scheme results from 3 factors;

(1) Many GPs did not participate fully in the call/recall system; 53% of all the PNLs were either not returned to the FHSA or contained no relevant information or details of previous cervical cytology. Amongst those that were completed, records of previous smears were often found to be inaccurate when compared to the details held by the cytopathology laboratory.

(2) There were also many inaccuracies in the FHSA data regarding the screening status and medical history of the women selected. The most serious of these errors resulted in women being removed from call/recall against the wishes of their GP.

(3) Inaccuracy of names, and particularly addresses, on the FHSA's lists.

5.2 Introduction & Description

In the first few months of 1986 the computerisation of the records held by Croydon FHSA * was completed and a call/recall scheme for cervical cytology implemented, based on five yearly screening of women aged 20-65 **.

Women were selected initially by virtue of their date of birth; every woman whose birthday fell within the call month and whose age ended with either a 0 or a 5 was selected by the computer. A second scan of the records was performed in order to recall the women for whom the date of the previous smear was known and who were due for routine recall, or for repeat cytology because of a previous abnormality. There were initially very few in these categories as no attempt had been made to enter the past records held by the local cytopathology laboratory.

The above selection took place two months prior to the birth date of the women concerned. A PNL of the women selected (Figure 5.1) was forwarded to the relevant family doctor in order to determine if an invitation for cytology was appropriate or, if not, the reason for exclusion.

The details abstracted from the returned PNLs were entered onto the computer and invitations were issued to the women for whom call was appropriate. If the GP failed to return the PNLs to the FHSA within four weeks, all the women selected were automatically called.

After the modem link was established in January 1987, the cytopathology laboratory directly updated the FHSA records if a woman attended for screening subsequent to call. Prior to this date the cervical smear forms were forwarded to the FHSA for entry by the clerical staff. In both instances, however, if no such information was forthcoming following two letters of invitation issued at intervals of six months, non-responder cards were sent to the family doctors. As well as the reminder function, these alerted the family doctor to inform the FHSA if the woman had been screened elsewhere.

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* The FHSA holds registration details (name, address, age) of all patients listed with the GPs responsible to their particular Health District. This information is constantly complied and updated. A patient is added to the register when (s)he registers with a GP and deletions occur when an individual registers with another doctor in a different FHSA.

** It is the analysis of the total number of women called, irrespective of age, that is reported here. This was undertaken due to the importance of the computerised call/recall as the system of the future. Since it was to be implemented across all Health Districts, a measure of its total success (or failure) seemed more pertinent than the imformation obtained for the target age-group alone. However, a synopsis of the results for women aged 40-64 can be found in Section 5.4.2.2 and it is these results that are reported in Chapters 1 & 9.

The letters of invitation used in Croydon Health District were compiled jointly by the author and a journalist * from one of the national tabloids, following pilot studies into the levels of comprehension and understanding of "women in the street" (Appendix A), and after detailed discussion with the Local Medical Committee and numerous individual practitioners. These sources revealed several significant factors;

(1) Many women, particularly those aged over 50 years, regarded a cervical smear test as a diagnostic tool, useful only to confirm the presence of cancer.

(2) Many women would attend only if they were symptomatic.

(3) The provision of a female practitioner is important especially to older women, or those without male partners.

(4) The terminology used is often not understood - for example, 'neck of womb' should be used in preference to 'cervix'.

(5) Treatment for any abnormality was seen as requiring prolonged hospital admission.

(6) There was confusion about the interval of time that should elapse between screenings.

Answers to these queries were incorporated into a standard letter (Appendix D) along with some detailed instructions regarding a choice of venues and whom to contact to make an appointment for the test.

This letter was adopted by the FHSA and the majority of GPs (over 90%) used it unchanged, although they were able to alter any aspect of it if they so wished.

At the commencement of the FHSA initiative, there were 161 Croydon responsible GPs and, of these, 14 were already running their own cytology call/recall scheme. Although they asked to receive the PNLs and agreed to inform the FHSA of administrative and screening details, these doctors undertook the responsibility to contact the patient directly. Although their patients are included in this study, no attempt has been made to compare the response rate of these few independent GPs with the scheme operated through the FHSA.

* Norman Luck was a reporter from the 'Daily Express' and, at the time of this study had been awarded the prestigious 'Newsman of the Year' award. He and his wife were also Croydon residents.

The FHSA was severely limited in its ability to measure the success of the call/recall scheme as the computer was only able to give details of the number of women called within a certain time interval, and the number of women whose results were recorded on the computer over the same duration. Although the details on all the smears performed throughout the Health District (and those forwarded from other Districts) were being entered on the computer on a monthly basis, there was no way of correlating these details with those women for whom an invitation had been issued. Calculation of response rate from the FHSA computer was therefore not possible * .

5.3 Methodology

Six months after the start of the computerised call and recall, this study commenced in order to determine:

(1) the actual response rate to the letters of invitation;

(2) the reasons for exclusion from call;

(3) patterns of attendance for cervical cytology;

(4) the number of abnormal smear results and the follow up of these patients ** .

For each month from September 1986 to August 1987, the FHSA forwarded to the South West Thames Regional Cancer Organisation two printouts; the first contained identifying details of all the women selected for call and the second listed identical details for the women who had been excluded from call. The programs to enable such selection were written specifically for this project.

In addition, the FHSA also forwarded;

(1) all the PNLs returned from the GPs;

(2) all the cervical smear forms that they had received from Wandle Valley cyto-pathology laboratory and from other Health Districts (less than 2% of total);

(3) all the non-responder cards received from the family doctors.

Across the year of this study three months were randomly chosen and, for all the women selected during these times (just over 25% of the annual total), further details regarding previous attendance for cervical cytology and response to call were

* The statistics software used by the FHSA has since been upgraded to permit calculation of response rates.

** In these instances the responsibility for recall passed from the FHSA to the woman's GP.

obtained from the local cytopathology laboratory. Any women whose smear had been read at the Wandle Valley laboratory had a Kardex entry containing her name and identifying details as well as listing the dates and results of all cervical smears - in some cases this information went back to the mid 1950's! This intelligence was held alphabetically and for the three months selected (September 1986, March and July 1987) all women listed on the FHSA printouts were cross-checked against this Kardex system. In the few cases where positive identification could not be made, the original smear forms were retrieved for further verification.

This additional checking was necessary due to the large number of women for whom there was no record of previous cytology entered on the PNLs. In addition it allowed for some approximation of the error in the recording of the screening history by the family doctors, as well as some tentative estimate of the women who had never been screened.

The patient details obtained from these sources were combined to form a large database. For analysis, two files were formed; one comprised the women excluded from call and the other those women actually issued with an invitation.

5.3.1 Women Excluded from Call

The reasons for exclusion were ascertained from the GPs' returns and the results analysed. Four categories were found to require more detailed following up. These were:

(1) The 'repeat advised' category; that is, some degree of abnormality had previously been detected and repeat cytology had been advised, outside the routine system.

(2) Those women who were pregnant and were due to be screened post natally. Consequently, the current call had been postponed or cancelled.

(3) A small group for whom the family doctor concerned stipulated that he/she would contact the women personally. These GPs were not among the 14 already running their own cytology scheme, but doctors who believed that a letter would be inappropriate for the women selected.

(4) The "missed calls" classification. These were women for whom the GP recommended call or recall but, for various reasons, were not issued an invitation.

5.3.2 Women Included for Call/Recall

All the women who were selected to receive a letter of invitation, or who fell into one of the above four categories which required more detailed follow up, had their particulars checked against the PNLs and non-responder cards, as well as across all the smear forms received for a minimum of 12 months after the call date. Details regarding previous attendance for cervical cytology, response time, cytology results, recall time, source of smear, marital status, parity, condition (pregnant etc.) and symptoms were recorded and analysed.

5.4 Results

5.4.1 Overall Response

The original data received from the FHSA had three categories of call;

(1) first call (no existing cytology results were on the computer);

(2) routine recall (details of the previous screening were known to the FHSA);

(3) repeat advised (which included all abnormalities - dyskaryotic and inflammatory smears as well as inadequate cytology).

Preceding the issue of the PNLs, 91% of all the women selected were classified as 'first call'; 1% were 'repeat advised', and the remaining 8% were 'routine recall'.

53% of the 24590 PNLs issued * were either not returned, or were sent back with no details of screening history, or other relevant information listed. But, on the basis of the intelligence received, 6001 individuals were excluded from call and 18574 invitations issued ** ***.

Among the women selected to receive an invitation, 83% were classified as 'first calls', 6% as 'routine recalls' and the remaining 11% as 'inadvertent calls'; that is, women who should have been excluded from call if the wishes of the family doctors'

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* This figure excludes 118 duplicate registrations resulting from name or address discrepancies (Ann versus Anne: 1a versus 1 The Avenue).

** In fact 18,589 invitations were issued but 15 of these went to male patients who are excluded from all analysis with the exception of Tables 5.1, 5.17 & 5.18!

*** For the month of December 1986, the system 'crashed' subsequent to the entry of the information recorded on the PNLs but before the issuing of the invitations. No back-up discs had been kept and the re-entry of the lost data was judged 'uneconomic'. As a consequence all of the 2132 women selected for this month were issued with an invitation.

had been respected or, more commonly, if the PNLs had reached the FHSA within the four week deadline. 26% of this category (3% of all the invitations issued) comprised of women with some degree of cervical abnormality.

As a consequence of the additional information obtained from the PNLs and the other sources, supplementary classifications to the three call categories were introduced. A complete breakdown of the data across all the individuals who were invited and those excluded from call is contained in Table 5.1.

Table 5.2 presents a breakdown of previous attendance for cervical cytology as obtained from the PNLs. On the basis of this source alone, it can be seen that 52% of the women for whom call had been postponed or cancelled were known to have been screened within the preceding five years.

The information listed on the PNLs for the women excluded from call for the months of September 1986, March and July 1987, varied little from that abstracted from the laboratory records. There were, however, significant differences between the two sources with regard to the women who were issued with an invitation to attend for screening (Figure 5.2).

A comparison of these data showed that when the PNLs were used in isolation, no record of previous cytology was determined for 72% of the women invited, and 21% had been screened within the preceding five years. When the PNLs were used in conjunction with the cervical smear forms and the non-responder cards, the number of unknown screening histories dropped to 61% and the number of women who were adequately screened rose to 30%. The most illustrative picture of screening history, however, was found for the women called in September 1986, March and July 1987 whose records were crosschecked with the details held by the cytopathology laboratory. Across these months only 55% of the women had no record of previous cytology and 36% had been screened within the preceding five years (Chi Square = 770.54, 2df, P = <0.0001).

As a consequence of this finding, the following analysis is broken down into; (1) information which had been checked with the cytopathology laboratory (the 'checked' data comprising 4668 women - 25.13% of the total women selected for call), or (2) information taken directly from the PNLs, smear forms and non-responder cards (the 'unchecked' data comprising 13906 women - 74.87%) * .

* Where the data excludes the women with a history of cervical abnormality the figures are 4511 and 13510 respectively.

5.4.2 Women Issued with Letter of Invitation

5.4.2.1 Total Sample

Table 5.3 presents a breakdown of post-invitation attendance for cervical cytology across the four major call classifications. Within the total sample of 18574 women issued with an invitation, 63% failed to attend for screening. However, among the 'checked' data the number of women who sought the service was significantly higher (39%) than amongst their counterparts whose records were not subjected to laboratory scrutiny (37%) (Chi Square = 9.74, 1df, P = <0.01). This difference was most pronounced in the 'first call' classification where 81% of the 'checked' category was found to have been screened post-invitation compared to only 77% in the 'unchecked' group (Chi Square = 6.88, 1df, P = <0.01).

This finding, however, is little more than a reflection of the different monthly rates of response which occurred across the year of this study (Figure 5.3). Significantly higher attendances were noted for the months of September and October 1986 and January 1987, with a corresponding drop in post-invitation screenings during June 1987 (Chi Square = 46.82, 11df, P = <0.001). The proportion of responders/non-responders has been plotted at the top of Table 5.3 and an 'Equation for Least Squares Line' has been calculated. This clearly shows that there is a downward trend in attendances for screening across the twelve months of the study. These findings were not related to the age of the women selected, nor with previous screening history. No significant difference in response rate was found to exist between December 1986 - when all the women selected were issued with an invitation - and the remainder of the year.

But, irrespective of the monthly variation in response, across all the three groups listed in Table 5.3, women who failed to attend for screening were more likely (P = <0.0001) to be coded to the 'first call' and 'inadvertent call' categories, while those who did seek the service were over-represented in the 'routine recall' and 'repeat advised' groups.

Table 5.3 also shows that across the total sample of women invited to attend for screening, 553 (3%) were found to have had a history of cervical abnormalities * . 82% of this group subsequently sought the service, with no significant differences being observed across the 'checked' and the 'unchecked' data. As these women should have been contacted individually by their family doctor and because, it can

* The coding of these abnormalities followed that used by the FHSA; that is, inflammatory and inadequate cytology were included along with CIN and hysterectomy for cancer of the *cervix uteri*.

be argued, their reasons for attendance were different from the women invited for routine screening, this group is excluded from the following analysis and the findings presented in isolation in Section 5.4.4.

It was possible to determine the screening history for 5671 (37%) women coded to the 'first call' classification and 881 (83%) in the 'routine recall' group. Table 5.4 presents a breakdown of these figures and shows that almost 70% of the women (27% of the total number of women in these two categories) were adequately screened for cervical cancer. However, 84% of the 'routine recall' category had been screened within the preceding five years compared with only 67% of the 'first call' classification ($P = <0.0001$).

Across all the women for whom previous attendance for cervical cytology could be determined, women who had been screened within the preceding 4-5 years were the most likely to respond positively to the letters of invitation with 76% acting affirmatively. Those least likely to seek the service were women who have not had cytology for an interval greater than five years, of whom only 62% were subsequently re-screened. These findings are presented in Table 5.5.1 and remained constant over the three data groups ($P = <0.01$ in all cases).

Table 5.5.1 also shows that 5324 (75%) of the 7070 women whose screening histories were known had been screened within the preceding five years. When related to the total number of women issued with an invitation this suggests that, under the DHA's own guide-lines, 29% of the women were unnecessarily called as they were already adequately screened for cervical cancer. The proportion of women adequately screened was significantly higher among the laboratory checked records - 78% to 74% (Chi Square = 5.18, 1df, $P = <0.05$).

A breakdown of screening history by age (Table 5.6) shows that, across all the data categories, the younger women were the most frequently screened, while those aged 40 or over were more likely not to have received cytology for an interval in excess of five years ($P = <0.0001$ in all cases).

The laboratory records were particularly useful in determining the accurate screening history of older women since Table 5.6 also reveals that more of those aged 40 or over in the 'checked' data had received cervical cytology within the preceding five years than their peers in the 'unchecked' sample (Chi Square = 7.21, 1df, $P = <0.01$).

Table 5.7 details screening attendances by age and shows that across all the women who were invited to attend for screening, those most likely to seek the service were those aged 30-44 years. The least likely were the women aged under 25 or over 64 years (P = <0.01 in all cases).

48% of the women called were under the age of 40 years and 7% were aged in excess of 65 years. While there was no significant difference in age distribution across the 'checked' and 'unchecked' samples, there was a disparity between the two groups with regard to the total number of women aged 40-64 years who attended for screening. In the laboratory inspected sample 40% subsequently received cytology compared to 36% across the 'unchecked' sample. This difference was statistically significant (Chi Square = 8.35, 1df, P = <0.01). A slight increase was also noted for the younger women (37% in the 'checked' sample; 36% in the 'unchecked' sample), but this difference did not attain significance. No explanation can be offered for this anomaly, other than it is a reflection of the aforementioned monthly fluctuations in response rate.

While there were no marked inconsistencies in the proportions of women attending for screening when those aged 40 or more were compared to the younger women, there was a difference between the two age groups with regards to the time taken to respond to the letter of invitation. Figure 5.4 illustrates these findings for the 'checked' data (Chi Square = 19.69, 6df, P = <0.0001) * and shows that the older women were significantly more likely to seek screening within either the first three months of the invitation being issued, or within 6-9 months. This appears to suggest that the older women were more influenced by both the initial letter and the reminder letter that was sent out at six months.

Table 5.8 shows the response to call among the 10951 women for whom it was impossible to determine previous screening history. This group was the least likely to respond positively to the letter of invitation, with only 16% seeking screening - the majority of these being women under 40 years (P = <0.0001). 48% of the attenders had been screened within three months of call/recall.

The length of time that elapsed between call and seeking screening is related to the date of last smear in Table 5.9. The quickest responders were the women who had not been screened for between 4-5 years. They sought the service within the first six months of the invitation being issued, while the most recently screened women took in excess of nine months to be 're-smeared' (P = <0.0001)

* The same also held true for both the unverified and the total samples - P = <0.0001 in both instances.

The cytology forms for all the women who responded positively to call and who had no history of abnormal smears were examined and, as these forms had a special section to indicate 'first smear', it was possible to sub-divide the 'no record' category into women for whom the date of last screening was unknown, and those who were attending for their first smear. In all, the date of last screening (or lack thereof) was determined for 94% of the responders. This data was then compared across the 'checked' and 'unchecked' samples (Table 5.10.1). The subsequent analysis showed that among the laboratory checked records there were significantly more women screened within the previous year, while there were more unknown histories among the unverified classification (P = <0.001). There was, however, no difference between the two categories for the 'first smear' group.

This finding strongly suggests that 20% of all the 'responders' had never before been screened, while 57% had received cytology within the preceding five years and 17% were 'lapsed attenders'.

5.4.2.2 Women Aged 40-64

8221 women aged between 40-64 years were issued with a letter of invitation. Of these, 147 (1.8%) had a history of cervical abnormalities and 83% were rescreened. These are excluded from the following analysis. 2987 (37%) of the remaining 8074 women subsequently sought screening.

The data for the target age group was also divided into the categories of 'checked' (1996 women) and 'unchecked' (6078 women). Unless otherwise reported the analysis can be assumed to have stood for all groups.

As with the total sample, the women who failed to attend for screening were more likely (P = <0.0001) to be coded to the 'first call' and 'inadvertant call' categories, while those who did seek the service were over-represented in the 'routine recall' and 'repeat advised' groups.

It was possible to determine the screening history for 3528 (44%) of the women with no history of cervical abnormalities, of whom 33 (1%) had had sub-total hysterectomies. Once again, attendance for screening was most marked among those who had been screened within the preceding 4-5 years (77%). Those who had not been screened for an interval greater than five years were the most reluctant to attend with only 62% seeking re-screening (Table 5.5.2).

In other words, 62% of the 'lapsed attenders' sought re-screening as a probable consequence of the letters of invitation, compared with 69% of the acceptably screened women.

In all, 2421 (69%) of the 3528 women whose screening history were known had been screened within the preceding five years. Extrapolating this figure to all 8074 women aged 40-64 called, it is possible that at least 30% of the invitations were issued to adequately screened individuals. However, 184 of this latter group (8% of those with known screening history & 2% of total responders) presented with symptoms and could, therefore, be said to require screening. Thus, 1546 adequately screened, asymptomatic women received cytology. In other words, 52% of the smears done as a probable consequence of the letters of invitation were unnecessary.

When the cytology forms for the women in the target age range were examined in isolation, the date of the last screening was determined for 94% of the responders. Following the method outlined above, 13% of the women who attended for call had never been screened; 58% had been screened within the preceding five years; and 23% had not received cytology for in excess of this time. These findings are outlined in Table 5.10.2 which also shows that there were significantly more adequately screened women and less unkowns among the 'checked' sample (Chi Square = 12.94; 3df, P=<0.01). For this group, 34% were necessary smears, 62% were unwarranted and the date of last screening was unknown for only 4%.

But, across the total sample, it would appear that 36% of the smears taken were necessary but, when related to the total number of invitations issued, this figure is only 13%. 19% of the invitations resulted in superfluous screenings and in 2% of cases the date of last screening (if any) could not be determined. In an additional 2% the women were satisfactorily screened but presented symptomatically.

5.4.2.3 Inadvertent Calls

Excluding the women with a history of cervical abnormalities, there were 1530 women called contrary to their GPs instructions, 744 aged 40-64 years. Of the 31% (33% of the target age-range) who subsequently attended for cytology, significantly more had undergone total hysterectomy for an unrelated condition (information derived from smear forms and PNLs), or had been screened within the previous five years (Chi Square = 111.3, 11df, P = <0.0001). Non-attenders were more prevalent among those women who, according to their GPs, had left the area, had had their call cancelled or had refused the examination. This information is presented in Table 5.11.1 for the total sample and in Table 5.11.2 for women aged 40-64.

5.4.2.4 Housing Tenure

The 4668 women whose cervical cytology records had been checked with the cytopathology laboratory were also coded for housing tenure * . 84% were resident in their own properties or renting in the private sector; 15% were council tenants and the remaining 1% were either institutionalised or living in accommodation provided with work (nurses homes, hotels etc).

The mean age of the council tenants was 40.0 years, compared with 39.2 years for the women resident in the private sector. There were no significant differences discernible across housing tenure in relation to age, response to the letters of invitation, screening patterns, or with regards to the distribution of cervical abnormalities (Figure 5.5).

It was possible to code 2037 women aged between 40-64 to housing tenure. 15% were council tenants, with an average age of 49.1 years. For those women resident in the private sector the average age was 48.6 years. 35% of local authority tenants had been screened within the previous 5 years and 39% responded positively to call. The figures for the private sector were 38% & 41% respectively, but the differences between the two groups were insignificant.

5.4.3 Screening Results

67% of the women who responded to call were found to have negative cytology although both these and mild inflammatory smears were more prevalent among the older women, while monilia, severe inflammation and mild or moderate dyskaryosis was more frequent among those under 40 years (Chi Square = 88.11, 12df, P = <0.001). One of the two cases of invasive carcinoma came from a women in her 30's who had a history of previous abnormality. The other was aged 50 who had been screened within two years and, apparently, nothing abnormal had been detected. She attended after 15 months, not in response to the invitation, but complaining of post menopausal bleeding.

There was a marked variation in cytology results when the first 6 months of the project when compared to the final 6 months (P = <0.0001 - Table 5.12). Overall, there were more negative smears for the months from September 1986 to February 1987. After this time, the number of aberrant findings increased quite dramatically,

* As it was impossible to check the accuracy of addresses, the classification of housing tenure was determined solely from the FHSA records.

particularly for the inflammatory, CIN 1 and CIN 2 categories. This increase coincided with the change-over of cytopathology laboratories within the Health District from Wandle Valley to Queen's Hospital.

The majority of the smear forms had GP listed as the sender (61%) followed by the AHA Clinics (23%). The older women were more likely to be screened by their family doctor, while those aged under 40 were over-represented in seeking the service from the Family Planning Clinics or from hospital Out Patient Departments (P = <0.001).

As a percentage of smears taken from any one source, the highest inadequate rate (i.e. unsuitable for cytological examination) came from the hospitals (4% of all smears taken). They also had the highest CIN detection rate. The highest percentage of negative smears came from the AHA Clinics while GPs were over-represented in picking up inflammatory smears, and the Family Planning Clinics had a higher than expected detection rate of trichomonas, monilia and CIN 1 (P = <0.001).

12% of the women who attended subsequent to invitation presented with gynæcological symptoms although this was more common in the younger women (P = <0.001). In all, 15% were using oral contraceptives; 6% had an intra-uterine contraceptive device in situ, and 4% were screened in relation to pregnancy. Only 1% of the total women screened were receiving hormone replacement therapy.

5.4.3.1 Demographic Details - Parity

Among those women who attended for screening, no differences were found to exist when parity was related with response times. But, when compared to where the smear originated, nulliparous women were more likely to be screened by the Family Planning Clinics, while those who had just one child were more frequently seen as a hospital out-patient. Women who had had either two or three children were screened more often by their GP, whereas those who had had four or more children were over-represented in seeking the service at the AHA clinics (P = <0.001).

5.4.3.2 Marital Status

The largest single category of responders were married women (63%) who were significantly more likely to present for screening at their GP's surgery within 1-3 months of receiving an invitation (P = <0.001). Not unexpectedly, there were more widowed or divorced women among the older women and they took between 4-9 months to respond, eventually seeking the service at AHA clinics. The group who

took the longest time to be screened were the single women who presented 10 or more months after invitation at Family Planning Clinics. However, this group was the most frequently screened and had the shortest time intervals between smears.

5.4.4 Women Requiring Active Follow Up

5.4.4.1 Previous Abnormalities

Across the total year, 870 women were found to have had cervical abnormalities or inadequate cytology that existed prior to selection for call. 553 (64%) of this number were women who had been inadvertently issued with an invitation due to (a) the late returns of the PNLs, and (b) insufficient records on the part of the FHSA. A further 263 were excluded from call and coded as 'repeat advised', to be contacted directly by their family doctor. The remaining 54 came to light under the 'missed call' classification.

644 (74%) were found to have had CIN 1-3; 26 (3%) had undergone hysterectomy as a consequence of invasive carcinoma * ; 160 (18%) had had inflammatory smears, while the remaining 40 (5%) had had smears taken that proved unsuitable for cytological examination (the inadequate category). All of these women were followed up for a minimum of 13 months subsequent to selection.

No record of screening was found post selection date for 202 (23%) women. Attendance was significantly higher and quicker among the women who were sent a computer generated invitation than those who should have been contacted by their family doctor (P = <0.0001 - Table 5.13). Overall, 39% of the women attended within three months of selection, while 9% of the women took 12 months or longer to seek the service.

All of the women who had had inadequate cytology or who had undergone hysterectomy for previous invasive carcinoma attended for re-screening, as did 86% of those who had had inflammatory smears. However, both the laboratory and FHSA records showed that only 72% of the women classified as having a neoplastic condition had a repeat smear (Table 5.14).

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* Tables 5.17 & 5.18 also list 18 women who, although excluded from this category, had also undergone hysterectomy for cancer of the *cervix uteri*. The reason for their non-inclusion was that their practitioners specifically stated that they did not need re-screening at the time of selection. As they were also not destined to receive a computerised invitation this group fell beyond the scope of this study, although additional follow up was undertaken. This further investigation found that, while 17 were under specialist care, only 8 women were adequately screened. The final woman had not been screened for almost 10 years due to additional health problems.

The vast majority of the women suffering from CIN 1-3 and inflammatory smears were under the age of 40. Invasive carcinoma was, as would be expected, more predominant among the older women (P = <0.0001 - Table 5.15). Table 5.16 shows the distribution of post invitation cytology results for the women who were classified to the 'repeat advised' category * . 35% of the women with a previous history of CIN had normal cytology. 23% had inflammatory smears and 20% were classified as still having a dyskaryotic condition. Among the women who had undergone hysterectomy for an invasive condition, 81% were found to be cytologically normal following a smear of the vaginal vault, and 8% were found to have additional neoplastic abnormalities. The remainder had either some degree of inflammation or infection, or the smear was unsuitable for cytological examination.

5.4.4.2 Missed calls

When the wishes of the GP were over-ridden with regard to the call/recall of a patient, this was classified as a missed call. The rationale for this category was that the GP might well have been requesting a smear (despite apparently normal cytology within 1-5 years) for medical reasons which he/she believed were not the concern of the FHSA, or in the mistaken belief that the FHSA would have details of previous cytology which would indicate some degree of abnormality.

On the original PNLs, there were 470 missed calls (see Figure 5.6). 54 of these (11% of total missed calls) were women with a history of abnormalities who were transferred to the 'repeat advised' category. All but one had been received cytology within the preceding two years and, with the exception of 7 (13%), all were subsequently rescreened.

It was impossible to determine the screening history for 113 women (24% of total missed calls), of whom only five sought the service.

221 women (47% of total missed calls) had received negative cytology within the preceding five years and 124 (55%) of them were rescreened. Of this latter group, 21 (17%) responded to an invitation issued at a later date; 10 (8%) had received an invitation prior to being categorised as a 'missed call'; 13 (10%) were screened routinely when they presented with symptoms, and 8 (6%) were screened in relation to oral contraceptive use.

* The 'unknown' classification results from the non-responder cards where the GP had entered date of smear but not the result.

The remaining 82 women (17% of total missed calls) were known not to have received cytology for an interval greater than five years and, of these, only 29 (35%) attended.

In all, 57% of the women classified as 'missed calls' did not seek screening. There was no difference discernible in age with regard to attendance although the younger women were over-represented in having been screened within the preceding two years, compared with six years for those aged 40 or more (P = <0.0001). There were also significantly fewer attenders among the women for whom no previous screening history was available (P = <0.0001).

5.4.4.3 Pregnant women

200 women were excluded on the grounds that they were pregnant and call was inappropriate since the PNLs stated that they would be screened post-natally. However, this study was unable to trace a subsequent smear result in 88 instances (44%). The rest all attended within the 18 months subsequent to when they should have been issued with an invitation. Once again, the greatest number of attenders (52% of those who sought the service) were screened within the first three months. Attendance was significantly higher among the women who had been screened within the preceding three years, while the lowest came from the 79 women (39%) whose screening history was unknown (P = <0.0001).

5.4.4.4 General Practitioner call

There was no record of previous cytology for 31 of the 67 women for whom the GPs concerned said that they would instigate call. All but three of the remainder had been screened within the preceding five years.

No attendance for screening was determined for 36 (55%) women but all of the remainder had responded within two years, with 43% of all attendances occurring within 1-3 months of the date when call was due.

5.4.5 Women Excluded from Screening

As previously mentioned (Section 5.4.1), when the details for September 1986, March and July 1987 were crosschecked with the cytopathology laboratory, the information obtained from the PNLs usually matched or superseded that held by the laboratory. For example, the woman concerned had undergone hysterectomy in the interval since the last screening. For the women excluded from call/recall less than

a dozen anomalies occurred and, in view of this, it was judged not to be worthwhile to present a breakdown of 'checked' versus 'unchecked' data for this sample. Thus, only the 'checked' data is used.

Of the 6001 women excluded from call, it was possible to identify only 5875 on the basis of the information received from the FHSA printouts. In the remaining 126 cases, the computer was unable to identify the NHS number (see Table 5.1) and, since only the name of the woman appeared on the printouts, identification was impossible.

Using the PNLs, the reasons for exclusion from call were determined for all but 10% of the remaining women. The date of the last cytological examination was known for 3273 women, of whom 95% had been screened within the previous five years. These details are outlined in Table 5.17, which also lists the various reasons for exclusion by the number of years that have elapsed since the last cervical smear.

54% of the exclusions occurred in women under 40 years who were more likely to have moved from, or be unknown to the practice, had left the district or were otherwise uncontactable (abroad etc). They were also more likely to be pregnant, be classified as 'repeat advised' or assumed to be sexually inactive ($P = <0.0001$ - Table 5.18). Not surprisingly, there were significantly more hysterectomies and more 'cancelled' classifications among the women aged 40 or more.

Across both groups, the most frequent reason for exclusion was that the woman had had a recent smear. However, the accuracy of this finding is open to some debate since, the details recorded on the PNLs indicated, paradoxically, that three had no record of ever receiving cervical cytology (e.g. "recent smear - never been screened"), 71 (3%) had not been screened for five years, three for six years and one had not had a smear for eight years (Table 5.17)! Once again the younger women were the best screened with significantly more having received cytology within the preceding year ($P = <0.02$).

5.5 Discussion

5.5.1 Response to the Letters of Invitation.

While the 37% response rate to the letters of invitation was constant both across all women called and those within the target age range and was also accurate with regards to the number of women who were sent an invitation and who subsequently attended for a smear test, it was not a credible indication of the success of the computerised

call/recall scheme since it does not reflect screening attendances as a proportion of the women in need of cervical cytology. Indeed, no previous screening history was available for 59% of the 18574 women selected for call, and a further 29% were known to have received negative cytology within the preceding five years. In addition, another 12% who did not require screening, or who should not have been contacted directly, were issued with an invitation to attend.

A more reliable (although still incomplete) picture of the attendance for screening was obtained from the 4511 women with normal cytological histories (1996 for those aged 40-64) whose records were cross-checked against the PNLs, cervical smear forms and non-responder cards, and then verified with the details held by the cyto-pathology laboratory. The information obtained from this latter source was more detailed than that obtained from any other authority, particularly for women aged 40 or more.

Among the women in this group, 1714 (38%) responded positively to the letter of invitation (40% among the target age range). Of these 20% were found to have never received cytology; 60% had been screened within the preceding five years, and 16% were lapsed attenders for the service. Although the remaining 4% had received at least one smear, the date of last screening was indeterminable. For the women aged 40-64 years the figures were 13%, 62%, 21% and 4% respectively.

Thus, among this smaller sample, only 36% (34% among the target age-range) of the smears that resulted from the letters of call/recall were performed on women who required screening. A further 5% were done on individuals who, although adequately screened, presented with symptoms, or were examined in relation to pregnancy. So, under the criterion adopted by the DHA (five yearly screenings on asymptomatic women), it is possible that as many as 59% of the smears done as a result of the computerised letters of invitation were superfluous.

Amongst the 2797 (62%) women who did not seek screening after being issued with an invitation, 18% were already adequately screened and 6% were known to have not received cytology for an interval greater than five years. No details were available for the remaining 76%. However, it is not unreasonable to assume that some of this latter group were adequately screened since other studies have demonstrated that as many as three-quarters of non-responders to invitations for cervical cytology had been screened in the recent past [3].

63% of the women classified as lapsed attenders sought re-screening subsequent to being called. But, this compares adversely to the 64% attendance rate among the women who had had negative cytology within the previous three years, and to those who had not been screened for between 4-5 years, of whom 72% sought the service. For the women aged 40-64 years the figures were 62%, 68% and 77% respectively.

It was impossible to determine accurately the number of women who had never been screened who subsequently sought cytology. But, a rough estimate is that the letters of invitation prompted 17% of 'never attenders' of all ages to be screened * .

When compared to the information derived from the PNLs, the laboratory checked data not only revealed a 15% increase in the number of adequately screened women, they also showed a greater effect of the letters of invitation. Among this group the response was 38% and, for the older women alone, it was 40%. The figures for the 'unchecked' data were 37% and 36% respectively. However, these findings are little more than a reflection of the variation in the monthly response with the highest acceptance rate occurring in September 1986 (42%) and the lowest in June 1987 (32%).

Interestingly, there was no significant variation from the average response for December 1986 when (due to computer malfunction) all the women selected, irrespective of screening history, were issued with an invitation. For this month, 37% of all the women called sought the service.

Although the laboratory records were particularly useful in determining the screening history of the older women, the details obtained from this source significantly altered the patterns of cytology uptake across all the women selected, over and above the information obtained from the PNLs. In other words, across the three months chosen for cross checking with laboratory records, 4024 women (89% of the total in this group) were classified as 'first calls' - that is, the screening histories were unknown following the return of the PNLs. The subsequent cross checking against laboratory records revealed that 1604 (40%) women had received at least one smear. Of this number, 1216 (76%) were adequately screened and 388 (24%) needed cytology. 62% of the latter and 69% of the former were subsequently re-screened.

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* The screening histories for both the responders and the non-responders were determined from the same sources; i.e. the PNLs, non-responder cards & the laboratory records. These determined that 420 (24%) responders and 2126 (76%) non-responders had no record of ever having had cytology. However, the cervical smear forms showed that 83% of this responder category were women who had previously never been screened, while the remaining 17% had had at least one smear, the date of which was unknown. If these percentages are extrapolated to the non-responders, it would appear that 1765 in this category had also never had a smear. Thus, across the total 4511 women, 2114 could be assumed to have never been screened; of these 349 (17%) sought the service.

If these figures are extrapolated to the total 15432 women who, across the total year, were classified to the 'first call' category, they imply that 4630 invitations and an unnecessary 3194 smears could have been avoided had the records held by the local cytopathology laboratory been entered on the computer prior to the commencement of the call/recall scheme.

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Across all the 18021 women (with no history of cervical abnormalities) who were invited, those most likely to seek screening were aged 30-44 years. Those aged over 60 or under 25 were the most reticent to respond, but these women were also pre-ponderant among the group for whom no screening history was available. But, when records were accessible, the women aged under 30 years were not only the most frequently screened but they were also, as far as could be judged from the FHSA registration details, the most mobile group. Consequently, it is not unreasonable to believe that at least some of these young women were adequately screened for cervical cancer - an assumption supported by other work [39,40,87-89].

While there was no difference in post-invitation attendance rates for cervical screening when those women aged 40 or over were compared directly with the younger women, the older women were the quickest to respond to both the initial letter of invitation and the reminder notice issued six months later. However, this finding is felt to reflect the need for screening since the older women were more likely not to have received cytology for in excess of six years. The younger women had, for the most part, been screened within the preceding three years.

There were also age differences in relation to where the service was performed with the older women, on the whole, being screened by their GPs, although those who were divorced, childless or without a male partner preferred to visit an all female local AHA Clinic. The 'youngsters', however, were more likely to receive cytology at Family Planning Clinics or as hospital out-patients.

Across all the women who responded positively to call, 50% did so within the first three months following the issue of the initial letter of invitation. By six months the response had risen to 65% and, the reminder letter issued at this time, persuaded another 16% to seek the service. At the end of 12 months, all but 10% of the responders had been screened.

Although the letters of invitation clearly emphasised the five yearly screening policy, over 75% of the women who responded positively had been screened within this

time. Thus, it appeared that many women were deciding for themselves that quinquennial smears were insufficient. It also transpired that many GPs were similarly unhappy with the length of time between screenings as 84% of the 'routine recalls' (whose screening history was known) were summoned within the five years stipulated by the DHA. In these cases the family doctors were making value judgements about the interval required between smears based on their knowledge of the patient, particularly if the woman concerned was unduly promiscuous, or had had multiple pregnancies, or had a history of sexually transmitted disease, or on the basis of contraception used. It was in this group of 'routine recalls' that the bulk of the so-named 'missed calls' occurred. The vast majority of these appeared to be either clerical errors on the part of the FHSA staff, or these same individuals making deliberate decisions which contradicted the wishes of the family doctor.

The most serious of these errors related to 54 women who were originally listed as 'routine recall' but were not issued with an invitation and, consequently, came under the 'missed call' classification. The information listed on the PNLs showed that they had had a previous abnormality which should have meant re-classification to the 'repeat advised' category and automatic re-selection for the following month. In all cases, the women concerned had been screened within the preceding two years and the PNLs were received by the FHSA within the required deadline.

When these women were not re-selected, the FHSA was notified and, upon checking, it was found that all of the women concerned had been flagged for recall five years after the date of last smear. The classification was then changed and all but seven were subsequently rescreened.

These problems would have been identified if a 'second check' system had been implemented but, at the end of this project, the information abstracted from the PNLs and fed into the computer by the clerical staff, was not subject to checking by a second person. Croydon did take some action, however, to try to cut down on the number of invitations issued to adequately screened women. Thus, if a woman appears to have a record of normal cytology, yet the GP requests an invitation before the selected time interval, the doctor is now contacted to determine that the call is valid.

----------oOo----------

Across the year of this study, almost 900 women were found to have had some degree of cervical abnormality. Due to incomplete records, and the late return of the PNLs,

the FHSA was unaware of almost two-thirds of these and issued routine screening invitations. Interestingly, the response was much higher among the invited group than among those who should have been contacted directly by their family doctor.

In all, 28% of the women with cervical intraepthelial neoplasia did not attend for re-screening, nor did 14% of those with inflammatory smears for whom repeat cytology was advised. While it is possible that this study was unable to trace all the cytology records *, the family doctor would have been informed of any such smears and should have reported this back to the FHSA on the non-responder cards. This did not occur and raises the question as to whether these women were notified about the necessity of re-screening. In view of this, and since the response rate was significantly higher among the women with atypical smears who were inadvertently issued with an invitation, there is something to be said for the FHSA taking over this role and issuing a separate letter to the women with known cervical abnormalities.

----------oOo----------

This study also illustrated the differences that exist between the various cytopathology laboratories with regard to the interpretation of cervical cytology. When Queens Hospital took over the smear analysis for the District following the closure of Wandle Valley hospital, the number of abnormal smears reported increased significantly.

----------oOo----------

5.5.2 Inaccuracies in the Family Health Service Authority records.

Prior to the establishment of the computerised system, the FHSA checked their records and attempted to correct faults and update demographic and personal records. The mistakes resulting from registration details cannot be quantified by this research although other work has shown that, despite careful updating, 9% of entries relating to age and address continued to be inaccurate [93]. Other studies have also shown that as many as 50% of non-responders to postal invitations had moved from the addresses listed on the FHSA registers [3,39,91,228-231]. Unfortunately, those most in need of cervical cytology were often those for whom details were incorrect; this was particularly true for women from the least advantaged social classes [39].

* Although 195 smears taken in hospital out patient departments from women with known abnormalities were forwarded to Wandle Valley for analysis, it was not possible to check hospital pathology records for those women who were referred to gynæcologists.

It is difficult to apportion blame for these inaccuracies in the population registers. There may be a long time-gap between a person leaving and their registering with a new GP. Furthermore, family doctors are usually unaware that a patient has moved until 3-6 months after she has registered with a new practitioner when old records are requested. Also, changes of address for people who move locally and remain with the same GP are seldom notified to the FHSA. Thus, most FHSA registers are inflated with people no longer at the recorded address and, conversely, some people resident in their area are not on the FHSA registers.

Although the GPs were not specifically asked to amend address details, the PNLs showed that many family doctors were aware of some patients who had left the District. It is possible that they had not informed the FHSA, although it is equally likely that the information was passed on and not acted upon. However, the 623 women to whom this applies form only 3% of all the women selected. But, this figure is derived from the 47% of the PNLs that were completed. It is therefore possible that the actual number of women who had moved out of the Health District is double this number. This is one area where it is hoped that the lack of communication between the various parties will be rectified by the net-working of all the FHSA systems.

An additional FHSA error was the dual registration of some 118 women selected by the computer during the evaluation year. There were further marked discrepancies between the GPs' records and those held by the FHSA in 78 instances. The bulk of these were age related with all the women concerned falling outside the age range of the call/recall scheme, although they were listed on the computer as being suitable for call. The youngest in this category was 4 and the oldest 92 years old!

Perhaps the least serious in terms of actual numbers, but certainly the most striking inaccuracies in the computerised records was the selection of 51 men deemed to require cytology. Of these 15 were actually issued with an invitation and one man is reported to have sought the service! On closer examination, the bulk of these errors occurred in non-English names or when a name was common across both sexes (eg. Jocelyn/Lesley etc).

These two latter points raise the issue of detection of discrepancies within the FHSA lists. That is to say, how many women who require call/recall are listed as being outside the required age-range, or are classified as men on the FHSA lists and, how will these anomalies come to light?

The problem of 126 individuals for whom no data was obtained because the computer was unable to identify the NHS number appears to be a consequence of re-programming the FHSA computer for this project. That is to say, various data fields within the computerised records of the individuals selected for call were flagged to enable these details to be transferred to a separate file. However, when the computer was unable to identify the flag (incorrect data entry during the transfer from manual to computerised records had resulted in a sequence of letters and numbers falling outside the defined parameters for this particular field), it failed to proceed to the next flag but advanced to the next record. As the format for the PNLs did not utilise this method of selection, as far as could be determined, the GPs involved were contacted about the patients concerned.

Apart from incorrect addresses, perhaps the greatest single problem which can be classified under the heading of inaccuracies is the number of (what this study has termed) 'inadvertent calls'. That is, women whose call should have been cancelled or postponed but due to the late return of the PNLs or the incomplete filling out of these articles, or clerical errors at the FHSA, an invitation was issued.

The results of these erroneous invitations range from the amusing (men being called - and attending), to the disquieting (women who had undergone hysterectomy for unrelated conditions and who, presumably, assumed they were no longer at risk), to the potentially very upsetting (women who had suffered from the disease as well as the numerous women who were found to require repeat cytology). There were also two instances where family doctors were understandably very annoyed that terminally ill patients should have received not only an invitation to attend for cytology but also a reminder that they had not yet been screened. In one case, the reminder arrived within days of the demise of the patient and, in both cases, the PNLs clearly asked for call to be cancelled on medical grounds.

In financial terms, there are also repercussions since, for example, 107 of the 273 women who had undergone hysterectomies for an unrelated condition which included removal of the cervix attended for screening. In all, 31% of the inadvertent calls (470 women) attended for screening, placing an extra burden on already scarce resources.

The problem of clerical errors has already been raised in relation to the 'missed calls', but many others were witnessed by the research team who spent numerous hours over the duration of this project in the FHSA offices abstracting data from the computer. During this time the researchers were bombarded with questions about

the information contained on the cytology forms * and on the PNLs. It was obvious that none of the staff had received any tuition about the subject and much time and error would have been saved if someone on site had some medical knowledge!

5.5.3 Inaccuracies in General Practitioners' data.

The problems encountered in relating response to the letters of invitation to the actual need for cervical cytology was a consequence of the lack of previous screening histories available to the FHSA. This resulted from (1) the reluctance of the FHSA to enter existing laboratory records onto their system, and (2) the GPs who failed to return or complete 53% of the PNLs issued between September 1986 and August 1987.

While not quantified scientifically, the cross checking of the cytology records against sources additional to the PNLs and many visits to doctors' surgeries, have led the author to believe that many GPs were too busy/unconcerned to check their records thoroughly, and when they did bother, in many cases their records were incorrect. These inaccuracies appeared to result from; -

(1) poor communication between the parties involved in the smear taking process;

(2) lack of previous cytology records resulting from the delay in the forwarding of records from other FHSAs;

(3) the practice among some family doctors of not keeping cytology forms or even noting the results in the patient's records.

During the initial five years, the efficiency of this system rests heavily on the participation of the GPs. But, once all women are in the system and all continuing information is automatically added from the laboratories, the reliance on the family doctors should be dramatically diminished.

In the interim, however, it was suggested that some of the Committee's existing (often under-utilised) clerical staff could be re-deployed to visit the practices of the defaulting GPs to abstract the information directly from the medical records. Two other recommendations were made: the first was to add a postscript to the letters of invitation requesting that the women notify the FHSA of the date of their last cervical smear. The second was that, following the issue of the non-responder card, the local

* As previously mentioned, the modem link between the laboratory and the FHSA was not fully functional until the beginning of 1987. Even after this time, all smears taken outside the Health District were received by the FHSA and passed to the clerical staff for entry.

Health Visitor should be contacted to visit the woman concerned to ascertain reasons for non-attendance and, where appropriate, to try to persuade her. All of these ideas were rejected on the grounds of cost.

Once an inter-connecting, cross Health District FHSA/laboratory computer link is established, the problems regarding the transfer of records between FHSAs should disappear. However, the problem of the FHSA not receiving the PNLs back within the allotted time span, which leads to all the women on that particular list being invited, needs some attention. In view of this, it might be advisable to send the PNLs out three months before the actual call date or, to suspend call for the defaulting doctors.

It appears that some re-education is necessary among certain GPs (or whoever filled out the PNLs on their behalf) since 79 women were excluded on the grounds that they were not sexually active. In the majority of cases, however, this judgement appeared to be based on either an erroneous belief that screening was unnecessary when the woman had suspended sexual activity ("no longer married", "no longer sexually active"), or a questionable belief in the virginity of the patient ("not on oral contraceptives", "unmarried Asian girl"). In less than 25% of the cases was the GP explicit ("virgo intacta", "never been sexually active", "dedicated virgin!", "celibate"). In a similar vein, much irrelevant medical history was also listed.

5.6 Conclusion

Intuitively, a computerised call/recall scheme seems to be a good and sensible idea. But, like all innovations, it needed to be carefully tested and evaluated before being implemented on such a wide scale. Had this occurred, many of the problems reported here would have been identified and overcome. It also requires co-operation between all people involved and a greater degree of commitment from GPs than was first realised.

Nevertheless, this study has demonstrated that the Family Health Service Authority computerised call and recall does appear to have a part to play in recruiting women for cervical cytology, but only if the population registers are adequately maintained. Until this happens, its true effectiveness cannot be judged.

Table of Tables

Table 5.1: COMPUTERISED CALL & RECALL
Revision of Call Classification: Included & Excluded Data

Classification	Included		Excluded		Totals
First Call	15432 83.0%	100.0%	0 0.0%	0.0%	15432 62.8%
Routine Recall	1059 5.7%	100.0%	0 0.0%	0.0%	1059 4.3%
Previous Abnormal	327 1.8%	55.4%	263 4.4%	44.6%	590 2.4%
Hysterectomy (ca. cervix)	26 0.1%	59.1%	18 0.3%	40.9%	44 0.2%
Prev. Inflammation	160 0.9%	100.0%	0 0.0%	0.0%	160 0.7%
Repeat Requested	40 0.2%	100.0%	0 0.0%	0.0%	40 0.2%
Recent Smear	550 3.0%	17.7%	2560 42.7%	82.3%	3110 12.6%
Hysterectomy	273 1.5%	38.5%	437 7.3%	61.5%	710 2.9%
Male Patient	15 0.1%	29.4%	36 0.6%	70.6%	51 0.2%
Left Area	189 1.0%	30.3%	434 7.2%	69.7%	623 2.5%
Medically Unfit	17 0.1%	48.6%	18 0.3%	51.4%	35 0.1%
Sexually Inacitve	29 0.2%	26.9%	79 1.3%	73.1%	108 0.4%
GP Cancelled Call (reason unknown)	66 0.4%	19.9%	266 4.4%	80.1%	332 1.4%
Pt. Refused Smear	35 0.2%	87.5%	5 0.1%	12.5%	40 0.2%
GP Postponed Call (reason unknown)	272 1.5%	79.1%	72 1.2%	20.9%	344 1.4%
Smear Date Unknown	0 0.0%	0.0%	287 4.8%	100.0%	287 1.2%
Pregnant	54 0.3%	21.3%	200 3.3%	78.7%	254 1.0%
Too Old	14 0.1%	100.0%	0 0.0%	0.0%	14 0.1%
GP Call	11 0.1%	14.1%	67 1.1%	85.9%	78 0.3%
Other	20 0.1%	54.1%	17 0.3%	45.9%	37 0.2%
Unknown	0 0.0%	0.0%	568 9.5%	100.0%	568 2.3%
NHS No. Unknown	0 0.0%	0.0%	126 2.1%	100.0%	126 0.5%
GP/FPC Discrepancies	0 0.0%	0.0%	78 1.3%	100.0%	78 0.3%
Missed Call	0 0.0%	0.0%	470 7.8%	100.0%	470 1.9%
Totals	18589	75.6%	6001	24.4%	24590

No statistical analysis reported

Table 5.2: COMPUTERISED CALL & RECALL
Screening Histories derived from Prior Notification Lists

Last Smear	Call Category: Included		Excluded		Totals
No record of Previous Cytology	13357 71.9%	83.0%	2728 45.5%	17.0%	16085 65.5%
Under 1 year	870 4.7%	47.3%	969 16.1%	52.7%	1839 7.5%
1 to 2 years	774 4.2%	42.9%	1032 17.2%	57.1%	1806 7.3%
2 to 3 years	1080 5.8%	60.3%	712 11.9%	39.7%	1792 7.3%
3 to 4 years	696 3.7%	70.8%	287 4.8%	29.2%	983 4.0%
4 to 5 years	501 2.7%	82.3%	108 1.8%	17.7%	609 2.5%
Over 5 years	1296 7.0%	88.7%	165 2.7%	11.3%	1461 5.9%
Totals	18574	75.6%	6001	24.4%	24575

No statistical analysis reported

Table 5.3: COMPUTERISED CALL & RECALL
Distribution of Call Classification by Attendance for Screening

	Checked Data					Unchecked Data					Total Sample				
CALL	Attended		Did Not Attend		Totals	Attended		Did Not Attend		Totals	Attended		Did Not Attend		Totals
First Call	1489	36.9%	2547	63.1%	4036	3941	34.6%	7455	65.4%	11396	5430	35.2%	10002	64.8%	15432
	81.0%		90.0%		86.5%	77.0%		84.9%		82.0%	78.0%		86.1%		83.1%
Recall	146	62.1%	89	37.9%	235	461	55.9%	363	44.1%	824	607	57.3%	452	42.7%	1059
	7.9%		3.1%		5.0%	9.0%		4.1%		5.9%	8.7%		3.9%		5.7%
Previous Abnormal	125	79.6%	32	20.4%	157	328	82.8%	68	17.2%	396	453	81.9%	100	18.1%	553
	6.8%		1.1%		3.4%	6.4%		0.8%		2.8%	6.5%		0.9%		3.0%
Inadvertant Call	79	32.9%	161	67.1%	240	391	30.3%	899	69.7%	1290	470	30.7%	1060	69.3%	1530
	4.3%		5.7%		5.1%	7.6%		10.2%		9.3%	6.8%		9.1%		8.2%
Totals	1839	39.4%	2829	60.6%	4668	5121	36.8%	8785	63.2%	13906	6960	37.5%	11614	62.5%	18574

Hypotheses

H0 The proportion of women classified to the the 4 alternative call categories is the same irrespective of attendance for screening

H1 A difference exists between screening attendance and call classification

Statistical Test

Chi Square with significance level P= <0.05

Decision	Chi square	DF	P<=	H0?
Checked Data	172.05	3	0.0001	Reject
Unchecked Data	537.91	3	0.0001	Reject
Total Sample	708.41	3	0.0001	Reject

Table 5.4: COMPUTERISED CALL & RECALL
Screening Histories of 'First Call' & 'Routine Recall' *

	Call Category				
Last Smear	First Call		Routine Recall		Totals
Under 1 year	484 8.5%	63.3%	281 31.9%	36.7%	765 11.7%
1 to 2 years	730 12.9%	91.7%	66 7.5%	8.3%	796 12.1%
2 to 3 years	1120 19.7%	84.0%	213 24.2%	16.0%	1333 20.3%
3 to 4 years	895 15.8%	93.0%	67 7.6%	7.0%	962 14.7%
4 to 5 years	560 9.9%	83.7%	109 12.4%	16.3%	669 10.2%
Over 5 years	1882 33.2%	92.8%	145 16.5%	7.2%	2027 30.9%
Totals	5671	86.6%	881	13.4%	6552

* Information from smear forms, non–responder cards & lab records

Hypotheses

H0 The proportion of women classified to the the 6 alternative "last smear" categories is the same irrespective of the type of call

H1 A difference exists across the call groups with regard to the date of last screening

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
490.29	5	0.0001	Reject

Table 5.5.1: COMPUTERISED CALL & RECALL
Distribution of Attendance by Years since Last Smear *

	Checked Data					Unchecked Data					Total Sample				
Last Smear	**Attended**		**Did Not Attend**		**Totals**	**Attended**		**Did Not Attend**		**Totals**	**Attended**		**Did Not Attend**		**Totals**
Within 3 years	647	63.9%	365	36.1%	1012	1709	66.9%	845	33.1%	2554	2356	66.1%	1210	33.9%	3566
	50.0%		54.5%		51.5%	48.9%		52.5%		50.0%	49.2%		53.0%		50.4%
4 – 5 years	374	71.9%	146	28.1%	520	969	78.3%	269	21.7%	1238	1343	76.4%	415	23.6%	1758
	28.9%		21.8%		26.5%	27.7%		16.7%		24.2%	28.0%		18.2%		24.9%
Over 5 years	273	63.2%	159	36.8%	432	817	62.2%	497	37.8%	1314	1090	62.4%	656	37.6%	1746
	21.1%		23.7%		22.0%	23.4%		30.9%		25.7%	22.8%		28.8%		24.7%
Totals	1294	65.9%	670	34.1%	1964	3495	68.4%	1611	31.6%	5106	4789	67.7%	2281	32.3%	7070

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to the the 3 alternative "last smear" categories is the same irrespective of attendance for screening

H1 Attendance for screening and date of last smear are related

Statistical Test

Chi Square with significance level P= <0.05

Decision	Chi square	DF	P<=	H0?
Checked Data	11.54	2	0.01	Reject
Unchecked Data	82.03	2	0.0001	Reject
Total Sample	87.34	2	0.0001	Reject

Table 5.5.2: COMPUTERISED CALL & RECALL
Distribution of Attendance by Years since Last Smear for Women aged 40 – 64 *

	Checked Data					Unchecked Data					Total Sample				
Last Smear	**Attended**		**Did Not Attend**		**Totals**	**Attended**		**Did Not Attend**		**Totals**	**Attended**		**Did Not Attend**		**Totals**
Within 3 years	299	66.9%	148	33.1%	447	748	68.5%	344	31.5%	1092	1047	68.0%	492	32.0%	1539
	45.0%		43.7%		44.6%	42.6%		44.6%		43.2%	43.3%		44.3%		43.6%
4 – 5 years	195	72.0%	76	28.0%	271	488	79.9%	123	20.1%	611	683	77.4%	199	22.6%	882
	29.4%		22.4%		27.0%	27.8%		16.0%		24.2%	28.2%		17.9%		25.0%
Over 5 years	170	59.6%	115	40.4%	285	518	63.0%	304	37.0%	822	688	62.1%	419	37.9%	1107
	25.6%		33.9%		28.4%	29.5%		39.4%		32.6%	28.5%		37.7%		31.4%
Totals	664	66.2%	339	33.8%	1003	1754	69.5%	771	30.5%	2525	2418	68.5%	1110	31.5%	3528

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to the the 3 alternative "last smear" categories is the same irrespective of attendance for screening

H1 Attendance for screening and date of last smear are related

Statistical Test

Chi Square with significance level P= <0.05

Decision	Chi square	DF	P<=	H0?
Checked Data	9.58	2	0.01	Reject
Unchecked Data	47.77	2	0.0001	Reject
Total Sample	53.33	2	0.0001	Reject

Table 5.6: COMPUTERISED CALL & RECALL
Distribution of Age by Years since Last Screening *

	Checked Data					Unchecked Data					Total Sample				
Last Smear	**Age < 40**		**Age => 40**		**Totals**	**Age < 40**		**Age => 40**		**Totals**	**Age < 40**		**Age => 40**		**Totals**
Within 3 years	539	53.3%	473	46.7%	1012	1396	54.7%	1158	45.3%	2554	1935	54.3%	1631	45.7%	3566
	61.5%		43.5%		51.5%	59.6%		41.9%		50.0%	60.1%		42.3%		50.4%
4 – 5 years	224	43.1%	296	56.9%	520	568	45.9%	670	54.1%	1238	792	45.1%	966	54.9%	1758
	25.6%		27.2%		26.5%	24.3%		24.2%		24.2%	24.6%		25.1%		24.9%
Over 5 years	113	26.2%	319	73.8%	432	377	28.7%	937	71.3%	1314	490	28.1%	1256	71.9%	1746
	12.9%		29.3%		22.0%	16.1%		33.9%		25.7%	15.2%		32.6%		24.7%
Totals	876	44.6%	1088	55.4%	1964	2341	45.8%	2765	54.2%	5106	3217	45.5%	3853	54.5%	7070

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to the the 3 alternative "last smear" categories is the same irrespective of age
H1 The number of years since last screening differs across age

Statistical Test

Chi Square with significance level P= <0.05

Decision	**Chi square**	**DF**	**P<=**	**H0?**
Checked Data	90.7	2	0.0001	Reject
Unchecked Data	235.61	2	0.0001	Reject
Total Sample	324.61	2	0.0001	Reject

Table 5.7: COMPUTERISED CALL & RECALL
Distribution of Attendance for Screening by Age Group *

	Checked Data					Unchecked Data					Total Sample				
AGE	Attended		Did Not Attend		Totals	Attended		Did Not Attend		Totals	Attended		Did Not Attend		Totals
< 25 years	151	28.8%	373	71.2%	524	482	30.6%	1094	69.4%	1576	633	30.1%	1467	69.9%	2100
	8.8%		13.3%		11.6%	10.1%		12.6%		11.7%	14.2%		18.8%		11.7%
25–29 years	239	37.2%	403	62.8%	642	613	34.3%	1174	65.7%	1787	852	35.1%	1577	64.9%	2429
	13.9%		14.4%		14.2%	12.8%		13.5%		13.2%	19.1%		20.2%		13.5%
30–34 years	228	41.2%	325	58.8%	553	590	37.2%	995	62.8%	1585	818	38.3%	1320	61.7%	2138
	13.3%		11.6%		12.3%	12.3%		11.4%		11.7%	18.3%		16.9%		11.9%
35–39 years	202	41.6%	283	58.4%	485	615	42.4%	837	57.6%	1452	817	42.2%	1120	57.8%	1937
	11.8%		10.1%		10.8%	12.8%		9.6%		10.7%	18.3%		14.3%		10.7%
40–44 years	244	43.0%	324	57.0%	568	694	39.6%	1060	60.4%	1754	938	40.4%	1384	59.6%	2322
	14.2%		11.6%		12.6%	14.5%		12.2%		13.0%	21.0%		17.7%		12.9%
45–49 years	164	40.8%	238	59.2%	402	426	37.3%	716	62.7%	1142	590	38.2%	954	61.8%	1544
	9.6%		8.5%		8.9%	8.9%		8.2%		8.5%	13.2%		12.2%		8.6%
50–54 years	141	38.2%	228	61.8%	369	388	33.8%	759	66.2%	1147	529	34.9%	987	65.1%	1516
	8.2%		8.2%		8.2%	8.1%		8.7%		8.5%	11.9%		12.6%		8.4%
55–59 years	120	37.7%	198	62.3%	318	369	36.1%	653	63.9%	1022	489	36.5%	851	63.5%	1340
	7.0%		7.1%		7.0%	7.7%		7.5%		7.6%	11.0%		10.9%		7.4%
60–64 years	124	36.6%	215	63.4%	339	317	31.3%	696	68.7%	1013	441	32.6%	911	67.4%	1352
	7.2%		7.7%		7.5%	6.6%		8.0%		7.5%	9.9%		11.7%		7.5%
> 64 years	101	32.5%	210	67.5%	311	299	29.0%	733	71.0%	1032	400	29.8%	943	70.2%	1343
	5.9%		7.5%		6.9%	6.2%		8.4%		7.6%	9.0%		12.1%		7.5%
Totals	1714	38.0%	2797	62.0%	4511	4793	35.5%	8717	64.5%	13510	4458	24.7%	7811	43.3%	18021

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to each of the alternative age categories does not differ across response to call

H1 Attendance for screening is age related

Statistical Test

Chi Square with significance level P= <0.05

Decision	Chi square	DF	P<=	H0?
Checked Data	37.71	9	0.01	Reject
Unchecked Data	92.52	9	0.0001	Reject
Total Sample	121.69	9	0.0001	Reject

Table 5.8: COMPUTERISEDCALL & RECALL
Response to Invitation by Age; Screening History Unknown *

Age	Response				
	Attended		Did Not Attend		Totals
Under 25 yrs	387 22.5%	23.0%	1295 14.0%	77.0%	1682 15.4%
25–29 years	282 16.4%	18.1%	1277 13.8%	81.9%	1559 14.2%
30–34 years	176 10.2%	15.1%	992 10.7%	84.9%	1168 10.7%
35–39 years	130 7.6%	13.3%	848 9.2%	86.7%	978 8.9%
40–44 years	129 7.5%	11.3%	1008 10.9%	88.7%	1137 10.4%
45–49 years	97 5.6%	11.6%	742 8.0%	88.4%	839 7.7%
50–54 years	95 5.5%	11.0%	772 8.4%	89.0%	867 7.9%
55–59 years	114 6.6%	14.0%	700 7.6%	86.0%	814 7.4%
60–64 years	134 7.8%	15.1%	755 8.2%	84.9%	889 8.1%
Over 64 yrs	174 10.1%	17.1%	844 9.1%	82.9%	1018 9.3%
Totals	1718	15.7%	9233	84.3%	10951

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to each of the alternative age categories does not differ across response to call

H1 Attendance for screening is age related

Statistical Test

Chi Square with significance level P = <0.05

Decision

Chi square	DF	P<=	H0?
124.71	9	0.0001	Reject

Table 5.9: COMPUTERISED CALL & RECALL
Distribution of Response Time by Years since Last Smear *

	RESPONSE TO CALL (months)																	
Last Smear	1–3		4–6		7–9		10–12		13–15		16–18		>18		Totals			
Within 3yrs	1067	45.3%	370	15.7%	380	16.1%	228	9.7%	156	6.6%	82	3.5%	73	3.1%	2356			
	44.0%		51.9%		49.6%		57.0%		62.9%		61.2%		70.2%		49.2%			
4–5 yrs	737	54.9%	204	15.2%	199	14.8%	93	6.9%	56	4.2%	34	2.5%	20	1.5%	1343			
	30.4%		28.6%		26.0%		23.3%		22.6%		25.4%		19.2%		28.0%			
Over 5 years	620	56.9%	139	12.8%	187	17.2%	79	7.2%	36	3.3%	18	1.7%	11	1.0%	1090			
	25.6%		19.5%		24.4%		19.8%		14.5%		13.4%		10.6%		22.8%			
Totals	2424	50.6%	713	14.9%	766	16.0%	400	8.4%	248	5.2%	134	2.8%	104	2.2%	4789			

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to the the 3 alternative "last smear" categories is the same irrespective of time taken to respond to the letter of invitation

H1 Response time is related to screening history

Statistical Test

Chi Square with significance level P=<0.05

Decision

Chi square	DF	P<=	H0?
90.77	12	0.0001	Reject

Table 5.10.1: COMPUTERISED CALL & RECALL
Responders to Call by Years Since Last Smear *

Last Smear	Data				
	Checked		Unchecked		Totals
'1st Smear'	349 20.4%	26.9%	949 19.8%	73.1%	1298 19.9%
under 1 year	155 9.0%	30.3%	357 7.4%	69.7%	512 7.9%
1–2 years	185 10.8%	26.5%	514 10.7%	73.5%	699 10.7%
2–3 years	307 17.9%	26.8%	838 17.5%	73.2%	1145 17.6%
3–4 years	233 13.6%	28.8%	577 12.0%	71.2%	810 12.4%
4–5 years	141 8.2%	26.5%	392 8.2%	73.5%	533 8.2%
6–10 years	204 11.9%	25.3%	601 12.5%	74.7%	805 12.4%
11–15 years	48 2.8%	23.1%	160 3.3%	76.9%	208 3.2%
16–20 years	15 0.9%	23.4%	49 1.0%	76.6%	64 1.0%
over 20 years	6 0.4%	46.2%	7 0.1%	53.8%	13 0.2%
Date Unknown	71 4.1%	16.9%	349 7.3%	83.1%	420 6.5%
Totals	1714	26.3%	4793	73.7%	6507

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to each of the alternative last smear categories is the same irrespective of data classification

H1 Date of last smear is related to data classification

Statistical Test

Chi Square with significance level P=<0.05

Decision

Chi square	DF	P<=	H0?
36.65	10	0.001	Reject

Table 5.10.2: COMPUTERISED CALL & RECALL
Responders to Call by Years Since last Smear
for Women aged 40–64 *

Last Smear	Data				
	Checked		Unchecked		Totals
"1st Smear"	99	25.1%	296	74.9%	395
	12.5%		13.5%		13.2%
Under 5 years	494	28.6%	1236	71.4%	1730
	62.3%		56.3%		57.9%
Over 5 years	170	24.7%	518	75.3%	688
	21.4%		23.6%		23.0%
Unknown	30	17.2%	144	82.8%	174
	3.8%		6.6%		5.8%
Totals	793	26.5%	2194	73.5%	2987

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to each of the alternative last smear categories is the same irrespective of data classification

H1 Date of last smear is related to data classification

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
12.94	3	0.01	Reject

Table 5.11.1: COMPUTERISED CALL & RECALL
Women Called Contrary to the Wishes of their GP *

History	Response: Attended		Did not Attend		Totals
Recent Smear	223 47.4%	40.5%	327 30.8%	59.5%	550 35.9%
Hysterectomy (no cervix)	107 22.8%	39.2%	166 15.7%	60.8%	273 17.8%
Left Area	25 5.3%	13.2%	164 15.5%	86.8%	189 12.4%
Medically Unfit	2 0.4%	11.8%	15 1.4%	88.2%	17 1.1%
Sexually Inactive	0 0.0%	0.0%	29 2.7%	100.0%	29 1.9%
Call Cancelled (reason unknown)	5 1.1%	7.6%	61 5.8%	92.4%	66 4.3%
Patient Refused	1 0.2%	2.9%	34 3.2%	97.1%	35 2.3%
Call Postponed (reason unknown)	82 17.4%	30.1%	190 17.9%	69.9%	272 17.8%
Patient Pregnant	17 3.6%	31.5%	37 3.5%	68.5%	54 3.5%
Patient Too Old	1 0.2%	7.1%	13 1.2%	92.9%	14 0.9%
Appointment Made	3 0.6%	27.3%	8 0.8%	72.7%	11 0.7%
Other	4 0.9%	20.0%	16 1.5%	80.0%	20 1.3%
Totals	470	30.7%	1060	69.3%	1530

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to each of the alternative screening history categories is the same irrespective of their response to call

H1 Response to call and screening history are related

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
111.3	11	0.0001	Reject

Table 5.11.2: COMPUTERISED CALL & RECALL
Women Called Contrary to the Wishes of their GP
for Women aged 40 – 64 years *

History	Response: Attended		Response: Did not Attend		Totals
Recent Smear	110 44.5%	42.6%	148 29.8%	57.4%	258 34.7%
Hysterectomy (no cervix)	84 34.0%	37.8%	138 27.8%	62.2%	222 29.8%
Left Area	9 3.6%	13.8%	56 11.3%	86.2%	65 8.7%
Medically Unfit	2 0.8%	20.0%	8 1.6%	80.0%	10 1.3%
Sexually Inactive	0 0.0%	0.0%	12 2.4%	100.0%	12 1.6%
Call Cancelled (reason unknown)	4 1.6%	9.3%	39 7.8%	90.7%	43 5.8%
Patient Refused	0 0.0%	0.0%	12 2.4%	100.0%	12 1.6%
Call Postponed (reason unknown)	32 13.0%	31.7%	69 13.9%	68.3%	101 13.6%
Other	6 2.4%	28.6%	15 3.0%	71.4%	21 2.8%
Totals	247	33.2%	497	66.8%	744

* Excluding women with a history of cervical abnormality

Hypotheses

H0 The proportion of women classified to each of the alternative screening history categories is the same irrespective of their response to call

H1 Response to call and screening history are related

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
47.58	8	0.0001	Reject

Table 5.12: COMPUTERISED CALL & RECALL
Distribution of Cytology Results – Sept 86 to Aug 87

Last Smear	Period 9/86 to 2/87		3/87 to 8/87		Totals
Inadequate	78	52.0%	72	48.0%	150
	2.2%		2.1%		2.2%
Negative	2562	54.8%	2117	45.2%	4679
	71.4%		62.8%		67.2%
CIN 1	109	39.9%	164	60.1%	273
	3.0%		4.9%		3.9%
CIN 2	15	32.6%	31	67.4%	46
	0.4%		0.9%		0.7%
CIN 3 / Invasive	6	54.5%	5	45.5%	11
	0.2%		0.1%		0.2%
Inflammation (all grades)	589	42.8%	787	57.2%	1376
	16.4%		23.3%		19.8%
Infection	81	53.3%	71	46.7%	152
	2.3%		2.1%		2.2%
Unknown	147	53.8%	126	46.2%	273
	4.1%		3.7%		3.9%
Totals	3587	51.5%	3373	48.5%	6960

Hypotheses

H0 The proportion of women classified to each of the alternative last smear categories does not vary with time

H1 Cytology results vary with time period

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
83.56	8	0.0001	Reject

Table 5.13: COMPUTERISED CALL & RECALL
Response to Invitation: Previous Abnormal Cytology

Response	Issued with Invitation? No		Yes		Totals
Non–attender	102 32.2%	50.5%	100 18.1%	49.5%	202 23.2%
Within 3 months	87 27.4%	25.9%	249 45.0%	74.1%	336 38.6%
4 to 6 months	41 12.9%	38.0%	67 12.1%	62.0%	108 12.4%
7 to 9 months	38 12.0%	45.2%	46 8.3%	54.8%	84 9.7%
10 to 12 months	17 5.4%	26.6%	47 8.5%	73.4%	64 7.4%
Over 12 months	32 10.1%	42.1%	44 8.0%	57.9%	76 8.7%
Totals	317	36.4%	553	63.6%	870

Hypotheses

H0 The proportion of women classified to the alternative response time categories is the same irrespective of whether invitation was issued

H1 A relationship exists between invitation status and response time

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
40.03	5	0.0001	Reject

Table 5.14: COMPUTERISED CALL & RECALL
Previous Screening Abnormalities by Attendance for Re-Screening

Abnormality	Sought Screening ? No		Yes		Totals
CIN 1 to 3	180 89.1%	28.0%	464 69.5%	72.0%	644 74.0%
Hysterectomy for Invasive Cancer	0 0.0%	0.0%	26 3.9%	100.0%	26 3.0%
Inflammation	22 10.9%	13.8%	138 20.7%	86.3%	160 18.4%
Inadequate Smear	0 0.0%	0.0%	40 6.0%	100.0%	40 4.6%
Totals	202	23.2%	668	76.8%	870

No statistical analysis reported

Table 5.15: COMPUTERISED CALL & RECALL
Previous Screening Abnormalities by Age Group

Abnormality	AGE				Totals
	Over 40 yrs		40 yrs and over		
CIN 1 to 3	477	74.1%	167	25.9%	644
	79.6%		61.6%		74.0%
Hysterectomy for Invasive Cancer	3	11.5%	23	88.5%	26
	0.5%		8.5%		3.0%
Inflammation	95	59.4%	65	40.6%	160
	15.9%		24.0%		18.4%
Inadequate Smear	24	60.0%	16	40.0%	40
	4.0%		5.9%		4.6%
Totals	599	68.9%	271	31.1%	870

Hypotheses

H0 The proportion of women classified to each of the alternative abnormal categories is the same irrespective of age

H1 Age and type of abnormality are related

Statistical Test

Chi Square with significance level P= <0.05

Decision	Chi square	DF	P<=	H0?
Checked Data	56.16	3	0.0001	Reject

Table 5.16: COMPUTERISED CALL & RECALL
Post–Invitation Screening Results: Previous Abnormal Cytology

Result of Screening	ABNORMALITY								
	CIN 1–3		Hysterectomy		Inadequate		Inflammatory		Totals
Inadequate Smear	7	58.3%	1	8.3%	2	16.7%	2	16.7%	12
	1.5%		3.8%		5.0%		1.4%		1.8%
No Abnormality Detected	164	60.3%	21	7.7%	19	7.0%	68	25.0%	272
	35.3%		80.8%		47.5%		49.3%		40.7%
CIN 1–3	95	82.6%	2	1.7%	1	0.9%	17	14.8%	115
	20.5%		7.7%		2.5%		12.3%		17.2%
Invasive Cancer	2	100.0%	0	0.0%	0	0.0%	0	0.0%	2
	0.4%		0.0%		0.0%		0.0%		0.3%
Inflammatory Smear	105	62.9%	1	0.6%	16	9.6%	45	26.9%	167
	22.6%		3.8%		40.0%		32.6%		25.0%
Infection	13	65.0%	1	5.0%	2	10.0%	4	20.0%	20
	2.8%		3.8%		5.0%		2.9%		3.0%
Unknown	78	97.5%	0	0.0%	0	0.0%	2	2.5%	80
	16.8%		0.0%		0.0%		1.4%		12.0%
Totals	464	69.5%	26	3.9%	40	6.0%	138	20.7%	668

No statistical analysis reported

Table 5.17: COMPUTERISED CALL & RECALL
Screening History by Reason for Exclusion

Reason for Exclusion	LAST SMEAR								Totals
	No Record		1–3 years		4–5 years		>5 years		
Recent Smear	3 0.1%	0.1%	2254 83.1%	88.0%	299 75.7%	11.7%	4 2.4%	0.2%	2560 43.6%
Male Patient	36 1.4%	100.0%	0 0.0%	0.0%	0 0.0%	0.0%	0 0.0%	0.0%	36 0.6%
Hysterectomy (benign)	406 15.6%	92.9%	8 0.3%	1.8%	5 1.3%	1.1%	18 10.9%	4.1%	437 7.4%
Hysterectomy (ca. cervix)	9 0.3%	50.0%	8 0.3%	44.4%	0 0.0%	0.0%	1 0.6%	5.6%	18 0.3%
Call Cancelled (reason unknown)	243 9.3%	91.4%	15 0.6%	5.6%	3 0.8%	1.1%	5 3.0%	1.9%	266 4.5%
Repeat Advised	136 5.2%	51.7%	127 4.7%	48.3%	0 0.0%	0.0%	0 0.0%	0.0%	263 4.5%
Unknown	568 21.8%	100.0%	0 0.0%	0.0%	0 0.0%	0.0%	0 0.0%	0.0%	568 9.7%
Left Area	345 13.3%	79.5%	61 2.2%	14.1%	7 1.8%	1.6%	21 12.7%	4.8%	434 7.4%
Had Smear (date unknown)	286 11.0%	99.7%	1 0.0%	0.3%	0 0.0%	0.0%	0 0.0%	0.0%	287 4.9%
Call Suspended (reason unknown)	44 1.7%	61.1%	23 0.8%	31.9%	2 0.5%	2.8%	3 1.8%	4.2%	72 1.2%
Sexually Inacitve	79 3.0%	100.0%	0 0.0%	0.0%	0 0.0%	0.0%	0 0.0%	0.0%	79 1.3%
GP Call	60 2.3%	89.6%	5 0.2%	7.5%	0 0.0%	0.0%	2 1.2%	3.0%	67 1.1%
Medically Unfit	17 0.7%	94.4%	0 0.0%	0.0%	0 0.0%	0.0%	1 0.6%	5.6%	18 0.3%
Other	17 0.7%	100.0%	0 0.0%	0.0%	0 0.0%	0.0%	0 0.0%	0.0%	17 0.3%
Discrepancies (GP/FPC)	50 1.9%	64.1%	8 0.3%	10.3%	14 3.5%	17.9%	6 3.6%	7.7%	78 1.3%
Patient Refused	4 0.2%	80.0%	1 0.0%	20.0%	0 0.0%	0.0%	0 0.0%	0.0%	5 0.1%
Missed Call	153 5.9%	32.6%	168 6.2%	35.7%	51 12.9%	10.9%	98 59.4%	20.9%	470 8.0%
Pregnant	146 5.6%	73.0%	34 1.3%	17.0%	14 3.5%	7.0%	6 3.6%	3.0%	200 3.4%
Totals	2602	44.3%	2713	46.2%	395	6.7%	165	2.8%	5875

No statistical analysis reported

Table 5.18: COMPUTERISEDCALL & RECALL
Distributionof Age by Reason for Exclusion

Reason for Exclusion	AGE				Totals
	Under 40 yrs		40 yrs and over		
Recent Smear	1382 43.8%	54.0%	1178 43.3%	46.0%	2560 43.6%
Male Patient	18 0.6%	50.0%	18 0.7%	50.0%	36 0.6%
Hysterectomy (benign)	33 1.0%	7.6%	404 14.8%	92.4%	437 7.4%
Hysterectomy (ca. cervix)	9 0.3%	50.0%	9 0.3%	50.0%	18 0.3%
Call Cancelled (reason unknown)	26 0.8%	9.8%	240 8.8%	90.2%	266 4.5%
Repeat Advised	225 7.1%	85.6%	38 1.4%	14.4%	263 4.5%
Unknown	344 10.9%	60.6%	224 8.2%	39.4%	568 9.7%
Left Area	289 9.2%	66.6%	145 5.3%	33.4%	434 7.4%
Had Smear (date unknown)	159 5.0%	55.4%	128 4.7%	44.6%	287 4.9%
Call Suspended (reason unknown)	45 1.4%	62.5%	27 1.0%	37.5%	72 1.2%
Sexually Inacitve	64 2.0%	81.0%	15 0.6%	19.0%	79 1.3%
GP Call	32 1.0%	47.8%	35 1.3%	52.2%	67 1.1%
Medically Unfit	6 0.2%	33.3%	12 0.4%	66.7%	18 0.3%
Other	3 0.1%	17.6%	14 0.5%	82.4%	17 0.3%
Discrepancies (GP/FPC)	41 1.3%	52.6%	37 1.4%	47.4%	78 1.3%
Patient Refused	2 0.1%	40.0%	3 0.1%	60.0%	5 0.1%
Missed Call	278 8.8%	59.1%	192 7.1%	40.9%	470 8.0%
Pregnant	196 6.2%	98.0%	4 0.1%	2.0%	200 3.4%
Totals	3152	53.7%	2723	46.3%	5875

Hypotheses

H0 The proportion of women classified to each of the alternative reason for exclusion categories is the same irrespective of age

H1 Age and type of abnormality are related

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
931.08	17	0.0001	Reject

Table of Figures

Figure 5.1 Computerized Call and Recall Prior Notification Form

Printed - 03-Nov-86 Dr A B BLOGGS (9876)	
Patients tests are as indicated below, please indicate your choice of action on the right hand side for each patient	
SMITH, MRS JANE (prev BROWN) 1 THE AVENUE CROYDON DoB 01.01.1947 Age 40 NHS No - ABCD123 Last test - Normal Lab & no - C/2345: RCT 5 years Wandle Valley done on - 12.04.82 Test due on or after - 01.01.87	EITHER: Go ahead with invitation indicated on the left ( ) OR: Postpone until..... (Date) due to a) previous test or b)..... OR Cease all invitations for this patient
ENTER name/address (Mileage & Drugs?) Below if changed	
Date..... Doctor's Signature.....	

Figure 5.2 Computerized Call and Recall Comparison of Screening Histories by Source

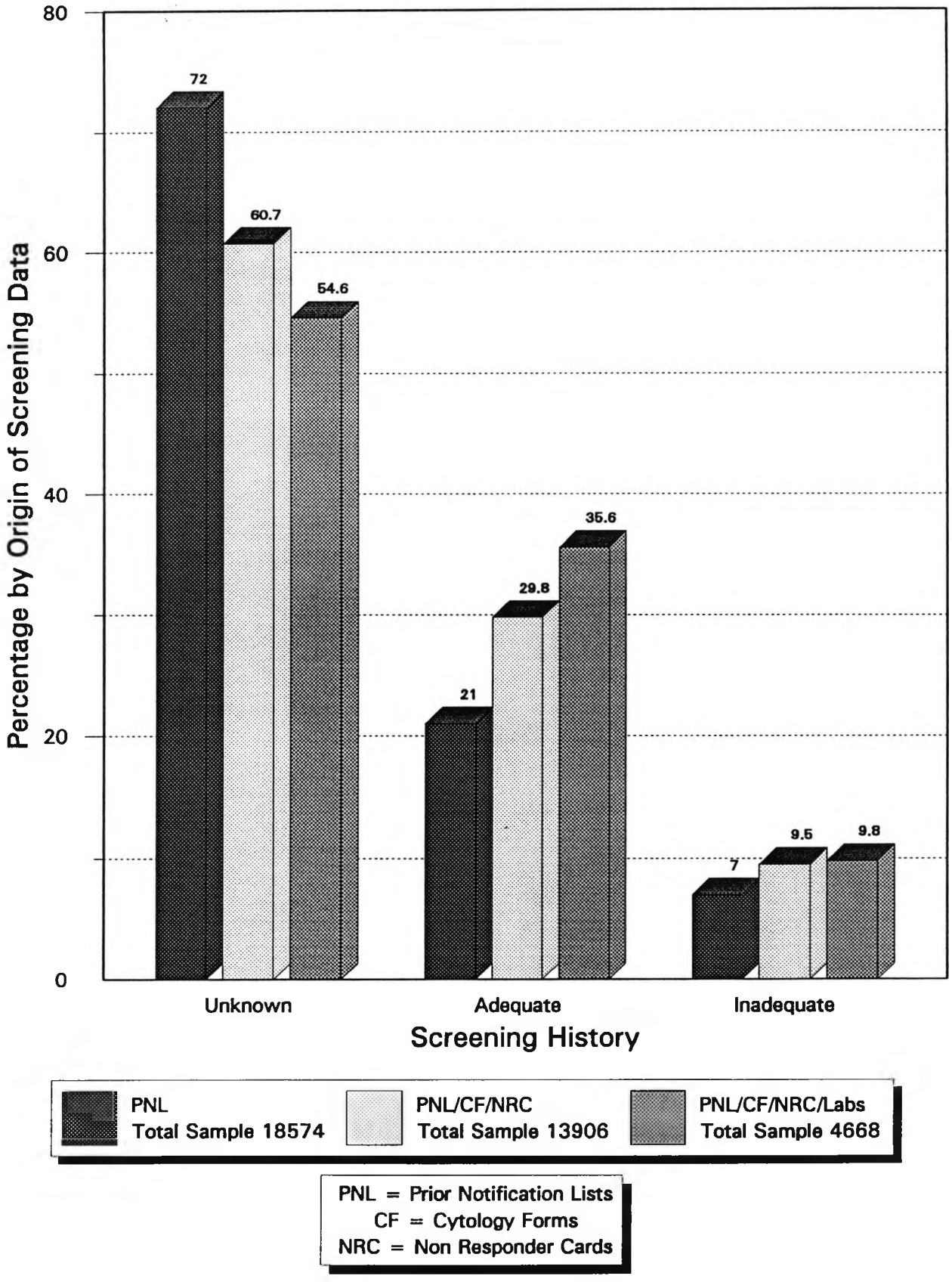


Figure 5.3 Computerised Call & Recall Response to Call: Monthly Breakdown

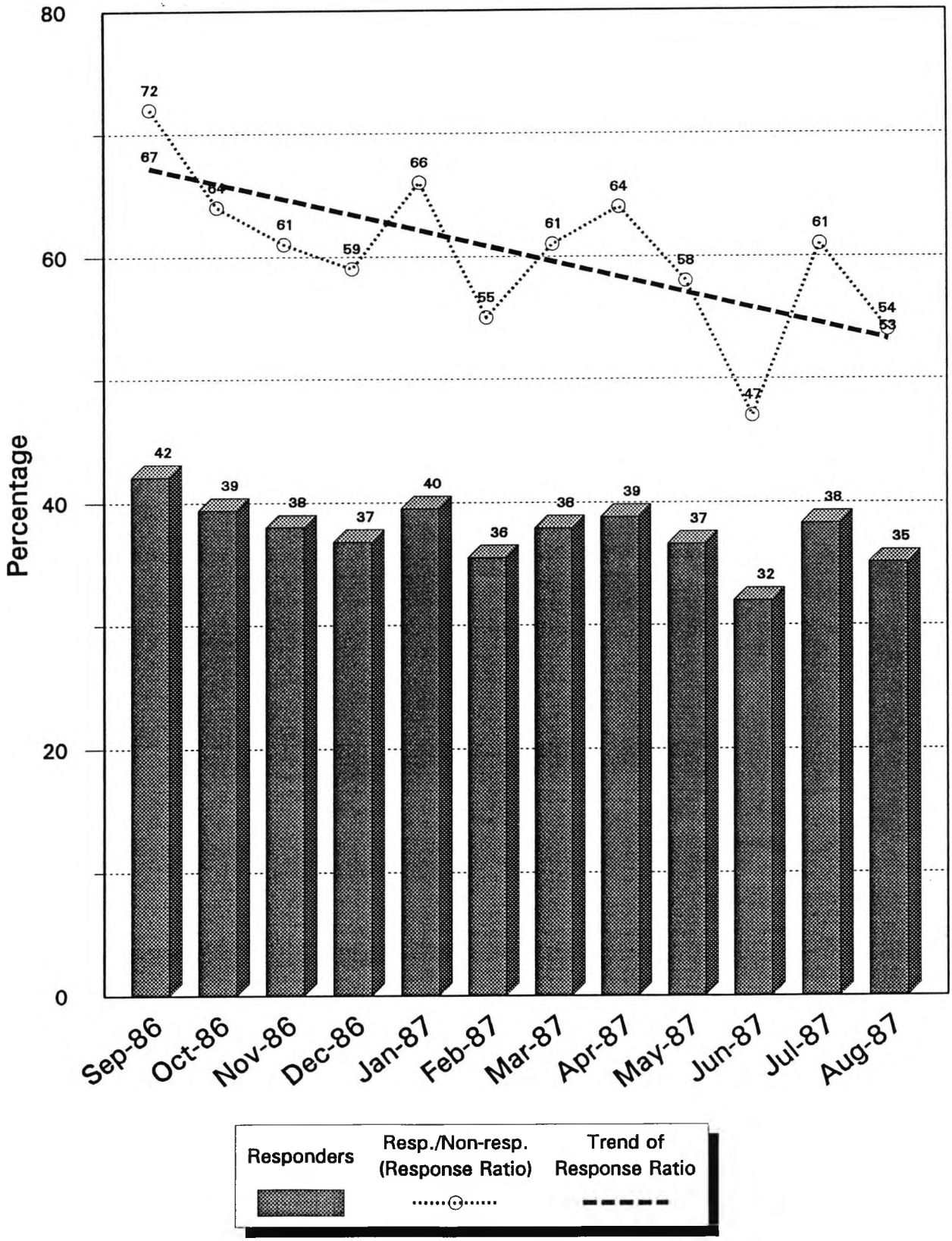


Figure 5.4 Computerized Call and Recall Variation of Response Time across Age

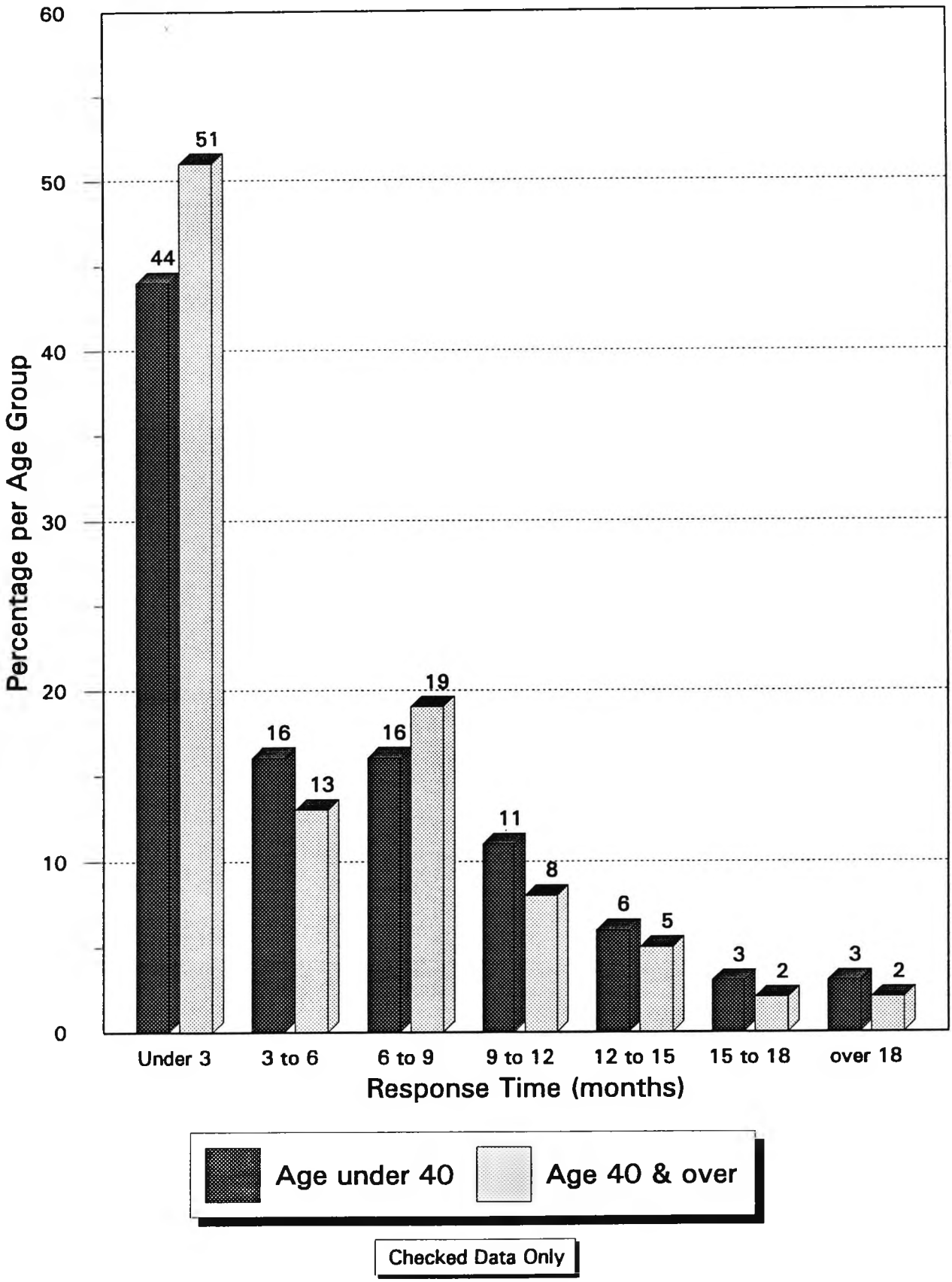


Figure 5.5 Computerised Call & Recall Housing Tenure

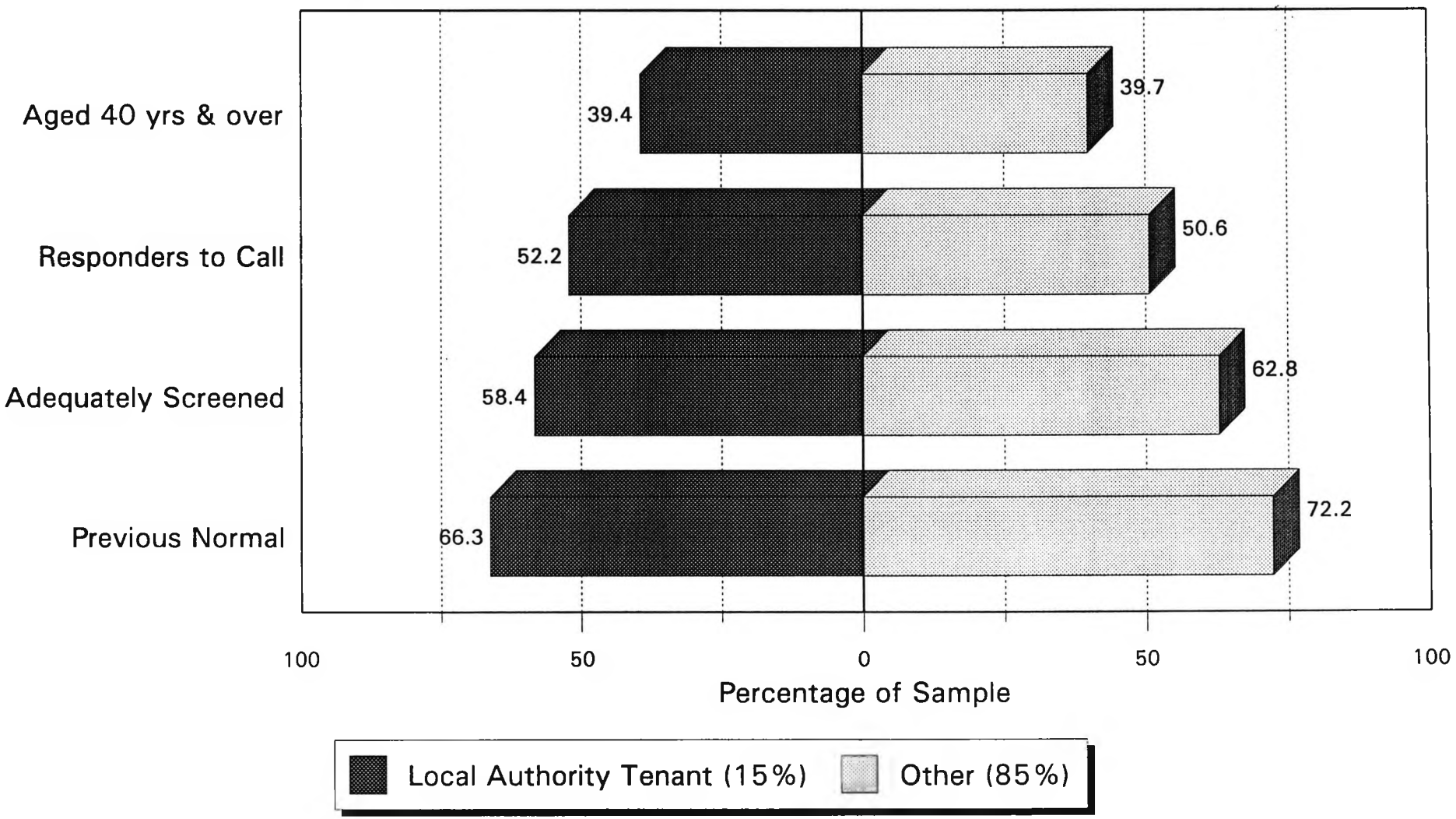
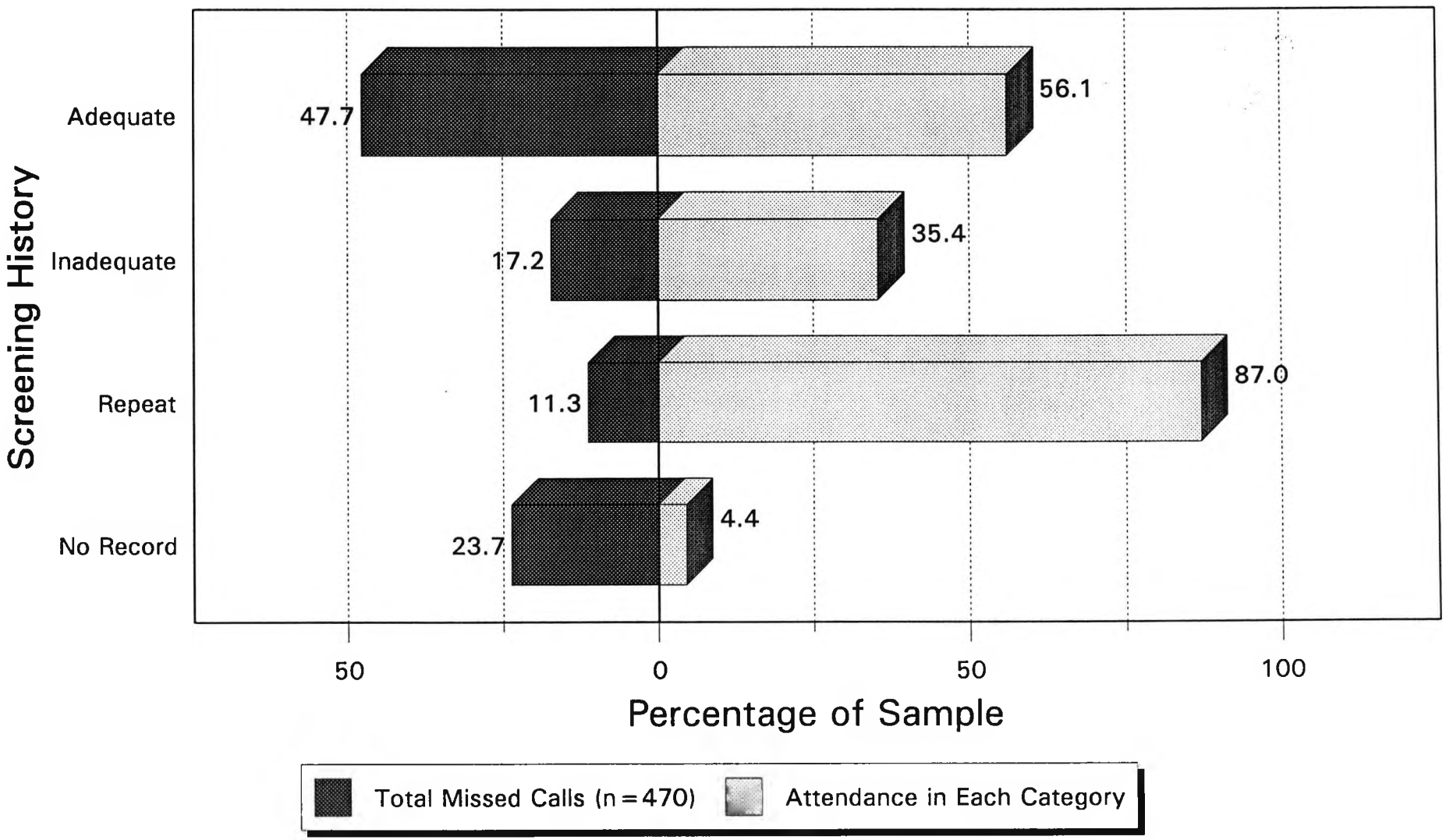


Figure 5.6 Computerized Call & Recall Missed Calls



CHAPTER 6
ADVERTISING

6.1 Summary

Between October 1985 and October 1986 an advertising campaign aimed at recruiting women between the ages of 40-64 years for routine cervical cytology was conducted in Richmond, Twickenham & Roehampton Health District. 110,000 leaflets were distributed to homes in the District and almost 400 posters were placed in areas known to be frequented by women in the target age range. The estimated cost of the campaign was £25,000.

Despite receiving critical acclaim within the advertising world and reaching a wide cross section of the population, the publicity material had little effect on persuading women to seek the service. In only 1 of the 26 wards which comprise the Health District, was there a significant increase in clinic attendances that could be attributed to the advertising campaign. This, however, was felt to be related to other factors occurring in conjunction with the publicity material.

1012 women were interviewed before and after the advertising campaign but the publicity had no significant effect in increasing knowledge or awareness about cervical cytology. Only 36% of the post-advertising sample could recall having seen the poster and leaflet under discussion, and only 9% could correctly remember details contained therein.

The interview study, however, offered reasons as to why women are not being screened and showed that lapsed attenders are more amenable to re-screening than those women who have never received cervical cytology. It has also provided evidence in line with other epidemiological studies that the inadequately screened women are the more ignorant about cervical cytology, are less well educated and more likely to be classified to Social Classes IIIM to V. There are also more likely to be aged over 50 years and resident in council housing.

6.2 Introduction

Within RTR Health District, an advertising campaign was designed with the intention of recruiting women, aged 40 years and over, for routine cervical cytology. The aim of the publicity was to promote three messages;

(1) If you are aged over 40 and have never had a cervical smear then it is important that you have one done.

(2) A cervical smear is only necessary once every five years.

(3) Where to go to obtain the service.

RTR Health District comprises, paradoxically, of some of the most affluent areas in the South East and also some very deprived localities. In view of this, it was expected that some of the target population would be poorly educated and would have problems relating to literacy and comprehension. This presented a challenge with regard to the design of the advertising material since it would be necessary to have a poster/leaflet that was visually attractive and eyecatching, with wording that was clear and concise, directly relevant to the population concerned, yet couched in such language that it could be understood by the least literate woman without insulting the intelligence of the more highly educated. Since expert advice was necessary, the design of the advertising material was undertaken in conjunction with Saatchi and Saatchi, who acted in an advisory capacity throughout the campaign.

6.3 Aim

The aim of the advertising campaign was to establish whether advertising was an effective means of persuading women to attend for cervical cytology and, failing this, did it have any appreciable effect on their attitudes towards the subject.

6.4 Method

6.4.1 Pilot Studies

Three pilot studies were undertaken. The first of these used a combination of GPs and laboratory records to establish the proportion of women adequately screened for cervical cancer. Simultaneously, a questionnaire study was undertaken to determine the level of comprehension, beliefs and understanding of the target group towards cervical cancer (Appendix A). It was found that fear (of both the disease and the procedure of having a cervical smear), ignorance (about the test and the terminology used), and embarrassment (at being examined, particularly by a male doctor) were important factors in compliance for cervical screening. This work also determined the places frequented by the targeted women in order to ensure that the posters were positioned in relevant areas.

This questionnaire formed the basis of the second pilot study which was used in conjunction with the advertising material, to determine if the publicity had significantly increased knowledge of the subject and attendance for cervical cytology.

The third pilot study investigated the effect of the 'Oxford incident' within the Health District, and found a significant increase in attendances for cervical cytology had occurred over the duration of the adverse publicity. However, amongst the older women, this was mainly confined to adequately screened females between the ages of 40-49 years (Appendix C).

6.4.2 Poster and Leaflet Design

A competition was established across the nine major art schools and some of the independent galleries within the Greater London area. All students were eligible for entry and several colleges allowed the work to be submitted for final examinations. Each college was visited by the author; the reasons for the competition were outlined and a brief talk given about cervical cancer. Written details were also handed out and each student was encouraged to discuss the subject with his or her mother to elicit the attitudes and beliefs of the age group concerned.

Over 50 posters were received. The competition was judged by two of the directors of Saatchi and Saatchi and four runners up were awarded £50 each. The joint designers of the winning entry were awarded £100 (although they returned this with the request that it be ploughed back into the research) and a certificate from Saatchi and Saatchi.

The winning design (Appendix G) has subsequently won the following awards.

(1) Creative Circle Bronze Award.

(2) Finalist in the New York Festival of Advertising

(3) Accepted twice for the Design and Art Directors Association annual of best advertisements for 1986.

It also received widespread publicity throughout the advertising world's media publications and was exhibited at numerous galleries in London and the suburbs.

The poster was adapted for leaflet array by the original designers. Although the wording and format of the two were identical, the siting of the poster determined the choice of the clinic listed. In other words, the address and telephone number of the nearest facility was entered. As the leaflets were to be distributed across clusters of wards, such accuracy was unachievable. Furthermore, the lack of space meant that

it was impossible to list all clinics within the Health District on each leaflet. Thus, an additional sheet listing clinic details specific to each of the eight distribution sectors, was stapled to every leaflet.

6.4.3 The Advertising Campaign

For the purpose of the leaflet and poster distribution, the 26 wards in RTR Health District were divided into eight approximately equal sectors. This staggered approach was done at the request of the DHA to prevent the cytology services, particularly the laboratory, from becoming overloaded. The advertising campaign was conducted between October 1985 and October 1986.

A total of 108,740 leaflets were distributed door to door across the intervention year. An additional 587 leaflets were left in the local libraries, community centres and Citizens Advice Bureaux. 384 posters were placed in areas known to be frequented by women of the target age range.

The distribution of the leaflets occurred through the use of two outside agencies. For Roehampton ward, the second pilot study, the leaflets were distributed via the local council. These were delivered in envelopes along with official notices to all council tenants. The research team supplied the advertising material to all private properties in the ward. The distribution to the rest of the Health District was via one of the free newspapers that was delivered weekly to all addresses.

All of the posters distributed were displayed and, with the exception of two small areas (36 houses in all), there is little reason to doubt that all the leaflets reached their destination. Thus, with these exclusions, the leaflets were delivered to every home in RTR Health District. However, this distribution was undertaken by an outside agency and, in one instant, leaflets were prematurely delivered to a 'before' ward while the pre-advertising interviews were taking place. Unfortunately this happened during the final weeks of the project with the last delivery of the advertising material. As a consequence, low risk areas were over-represented in the post-advertising sample.

6.4.4 Evaluation

The effectiveness of the advertising campaign was evaluated on two levels;

(1) Screening attendances at the local clinics. This was achieved by abstracting the attendance rates on a monthly basis for each clinic for both the year preceding and the year of the advertising campaign.

(2) An interview study was undertaken to determine if the advertising campaign had had any effect on the knowledge, attitudes and beliefs of the target population towards cervical screening.

6.4.4.1 Questionnaire Development and Analysis

The first version of the questionnaire was piloted on a sample of 53 women aged 40-64 years, all of whom were council tenants. The content analysis that resulted from these interviews showed that the questionnaire needed substantial revision. All sections were expanded and more questions added; the wording of questions that caused confusion were revised and prompts were added in order to elicit complete answers.

The revised questionnaire, in conjunction with the advertising material, was then piloted on 235 women, predominantly council tenants, within Roehampton ward. The subsequent analysis showed that few alterations were necessary other than additional prompts being required with regard to eliciting information from the open-ended questions, particularly with regard to description of the posters/leaflets and previous screening history. Indeed, so little revision was necessary, that it was decided to include these 235 questionnaires in the main interview study.

The final questionnaire consisted of 64 questions subdivided under 10 headings. Questions on demographic characteristics and use of the health services were followed by a more detailed probing into knowledge and attitudes towards, as well as attendance for, cervical cytology (Appendix E).

Much of the data in the questionnaire resulted from the content analysis of the replies obtained to the open-ended questions. In these instances, each category is not mutually exclusive and the total number of utterances exceeds the number of women who answered the questions.

In this type of situation, normal non-parametric tests were contra-indicated unless no significant differences were found to exist in the number of utterances across both the 'before' and 'after' samples [232]. As no anomalies were found to exist across any of the variables, the raw scores were then subjected to further analysis using the Chi Square Goodness of Fit test. Such analysis is demonstrated in Tables 6.2, 6.5 and 6.6 where the right hand column of each table indicates the probability and significance levels of the direct comparison across the pre- and post-intervention samples.

6.4.4.2 Derivation of Interview Wards

RTR Health District comprised 26 wards which, on the basis of the 1981 Census data, were matched for population, unemployment, social class and housing tenure. Using these figures the wards were classified as either;

High risk high unemployment; high density council housing; manual and unskilled workers (Social Class IIIM to V).

Moderate risk moderate unemployment; moderate density council housing; mixed social class.

Low risk low unemployment and local authority tenure housing; skilled and professional workers (Social Class I & II).

Five wards were deemed to be high risk, five were moderate risk and the remaining 16 were judged as low risk.

Within each classification, the two wards that were the most closely matched on all indices were selected and randomly assigned 'before' or 'after' status. In the 'before' ward, the interviewing occurred prior to the establishment of the poster/leaflet campaign. In the 'after' ward the reverse occurred with interviewing taking place within 4-6 weeks after placement of the advertising material.

N.B. During the second pilot study, the same ward (Roehampton) had been used for both the pre- and post-advertising interviews. In each case a large, stand alone council site and its immediate periphery had been visited. The inclusion of this data meant that three high risk wards were included in the interview study, as opposed to two medium and two low risk wards.

6.4.4.3 Sample Size

The first pilot study established that the proportion of women who had received cervical cytology within the previous five years was .36 (Appendix A). On the basis of this work it was estimated that in order to be 95% confident of showing a 10% or greater improvement in the number of women who were adequately screened for cervical cancer, it was necessary to obtain completed questionnaires from a minimum of 765 women across the pre- and post-advertising samples. The initial advertising study also showed that just over 50% of the women approached would agree to be interviewed. Thus, to obtain the desired number of interviews, over 1,100 women would have to be approached.

The only available figures regarding the number of women aged 40-64 years resident in the Health District were contained in the 1981 Census Data. These indicated that there were about 11,000 women in the target age range in the interview wards and that an approximate 10% sample from each ward was necessary.

Both pilot studies had shown that women aged 40-60 years were particularly difficult to catch at home as many had returned to full or part time employment. Interviewing at weekends and during the evenings, although encountering a higher proportion of this age group, obtained more refusals since these women were genuinely busy with house and family chores.

The difficulty of finding women aged 40-64 years at home had implications for the selection of the target properties. In the second pilot study, the interviewers had initially approached every 10th residence. However, the yield of interviews was so small that it was necessary to visit one in three homes and, finally, to employ blanket door-to-door visiting; that is, every door was knocked on until the determined target for the ward was met.

6.4.4.4 Interviewing Technique

Three female interviewers * working separately within a randomly selected area of each designated interview ward, employed blanket door to door interviewing. If the door were answered, the interviewer introduced herself as an employee of the Regional Health Authority (showing her identity card). She explained that she had been asked to find out how women aged 40 or over felt about the health services that were being provided for them. If a woman of the target age range was in residence, she was asked if she would mind answering a short questionnaire pertaining to women's health, and was assured that all interviews would be treated in the strictest confidence. The interviewer did not ask her name. If any woman refused to co-operate, the interviewer attempted to persuade her, or would offer to come back at a more convenient time. If she continued to decline, the reason for refusal was noted. If no answer was obtained at an address, the interviewer would return at a different time of day and on different days.

The presentation and format of the interview remained constant across all the three interviewers. All replies were recorded verbatim and subject to content analysis (Appendix F). At the end of the interview, all questions pertaining to cervical cytology were answered and details of where to obtain the service were given.

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* Two of the interviewers had been trained in interviewing techniques while at University. The third interviewer learnt 'on the job'.

6.5 Results

6.5.1 Effect of the Advertising Campaign - Local Clinic Uptake

In order to determine the local effect of the advertising campaign, details of screening attendances were abstracted from the 12 clinics that were publicised in the advertising campaign for the year preceding and the actual year of the intervention. But, these data were not available prior to 1985, nor were the figures broken down by age and this latter information had to be obtained from the records held by the cytopathology laboratory.

Between November 1984 and October 1986, a total of 9716 cervical smears were taken from all age groups by the twelve clinics. 4993 (51%) of these came from between November 1984 and October 1985 - i.e. prior to the advertising intervention. In particular, a significant increase was noted for the months of March to August 1985 (Chi Square = 211.5, 11df, P = <0.0001). This corresponds directly to the duration of the 'Oxford Incident'. Figure 6.1 illustrates the percentage response for each month of the study with the corresponding figures for the previous year.

When the clinic returns for each of the wards were analysed in isolation, the increased response for the spring and summer of 1985 manifested in all but three wards and, in only one sector (Roehampton ward - the second pilot area), was an effect determined which could be directly attributed to the advertising. In this ward the advertising had commenced at the beginning of October 1985 and a significant increase in cervical cytology was recorded by the three clinics covering the ward for the October through to December 1985 (Chi Square = 92.72, 11df, P = <0.0001). Due to the lack of 1984 data, it was impossible to determine if this effect was confined mainly to women aged 40 or more. However, there is some evidence to suggest that this was the case since a breakdown of the post advertising data, across all the clinics, showed that there was a significant increase in screening attendances for the older women in November 1985 (Chi Square = 28.92, 11df, P = <0.01). These data are presented in Figure 6.2.

Table 6.1 shows that there was no significant difference in age distribution across the pre- and post-advertising samples. In both cases 63% of all the cervical smears came from women under the age of 40 years. This figure remained constant even during the time of the adverse publicity arising from the Oxford incident. However, during the media interest, the women aged under 40 sought cytology significantly quicker than the older women (Chi Square = 58.7, 5df, P = <0.0001). This finding

is illustrated in Figure 6.3, which shows that the younger women were over-represented in seeking screening between March and June 1985, while the older women did not respond significantly to the publicity until the July and August.

6.5.2 Sample Data

Although the quota of women interviewed exceeded the estimated required from each ward and the target number of interviews was reached that would allow for a confident prediction if a 10% or greater increase in the number of women adequately screened had occurred, the lack of up-to-date ward data made it difficult to judge the credibility of the population interviewed, particularly with regards to the age of the women sampled. The 1981 Census Data was six years old, and the 1984 Mid-Year Estimates of Population were not detailed enough for this study. Nevertheless, both of these indicated that, in a sample of women aged 40-64 years in the chosen interview wards, those aged 60-64 years would form approximately 21% of the population. The corresponding figure in the interview sample was 29% which meant that the older women were significantly over-represented (1981 Small Area Statistics v interviews - Chi Square = 22.02, 4df, P = <0.001. 1984 Mid-Year Estimates of Population v interviews - Chi Square = 17.66, 4df, P = <0.01 respectively)* .

57% of the women interviewed didn't work, but 41% of these were aged 60-64 years. Thus, simply by virtue of availability, it is hardly surprising that the older women were more predominant.

This problem was recognised early on, and both weekend and evening interviewing were undertaken during the second pilot study. This was successful in finding more women under 60 at home, but the refusal rate increased markedly and the number of completed interviews for the younger women was no greater than for interviewing occurring during the weekday. Indeed, due to family and domestic commitments, the women participating in the 'unsocial hours' interviewing were under greater pressure to complete the questionnaire quickly. The average time of these interviews was only 10 minutes and much of the information obtained was monosyllabic and scanty.

* Since the completion of this work the 1991 Census data have become available. Although not undertaken by the author due to insufficient time, it would be interesting to see if the differences commented on here represented sampling bais or simply the changing characteristics of the area over time.

6.5.3 Effect of the Advertising Campaign - Factor Analysis of Questionnaire

Factor analysis of the questionnaire variables converged in 20 iterations, isolating 20 factors which accounted for 64% of the variance. These factors are listed below.

Factor	Factor Name	Eigenvalue (1)	% of variance (2)
1	*Screening History*	6.74132	10.9
2	*Adverts*	4.04010	6.5
3	*Hysterectomy*	3.33188	5.4
4	*Demographic & housing variables*	2.79100	4.5
5	*Age; social class (own); academic achievements; parity*	2.39542	3.9
6	*Knowledge of anatomy*	1.82752	2.9
7	*Knowledge of tests*	1.74245	2.8
8	*Lapsed attenders*	1.69643	2.7
9	*Marital status & social class (husband)*	1.58819	2.6
10	*Interviewee reliability & origin*	1.43595	2.3
11	*Knowledge of cervical cancer*	1.35841	2.2
12	*GP status*	1.32719	2.1
13	*Female practitioners*	1.29554	2.1
14	*Interviewer*	1.24771	2.0
15	*Prevention of cervical cancer*	1.19473	1.9
16	*Place of screening*	1.13687	1.8
17	*Friends reaction to cervical cytology*	1.11532	1.8
18	*Own reaction to cervical cytology*	1.08059	1.7
19	*Frequency GP seen*	1.06387	1.7
20	*Reason for first screening*	1.00901	1.6

(1) Total variance explained by each factor
(2) % of the total variance attributed to each factor

Overall the factors isolated closely followed the 10 defined sections of the questionnaire. However, the following differences emerged.

(1) The variables 'hysterectomy' and 'lapsed attender' emerged as separate factors distinct from the total grouping of 'screening history'.

(2) The perceived reliability of the woman interviewed was strongly linked with her ethnic origin and, in retrospect, was found to be due to language difficulties.

(3) Personal details were also broken up with 'marital status' combining with 'social class of husband', while the woman's age, parity, academic achievement and own social class were strongly linked.

(4) A general preference for a female GP was strongly correlated with a preference for a woman doctor to perform cytology.

Overall, these differences could intuitively have been expected, and the questionnaire was judged to be internally valid.

6.5.4 Effect of the Advertising Campaign - Interviewing Response Rates

Of the 9443 properties visited, only 13% were occupied by women in the target age range. In all, 1226 women were found to be aged 40-64 years. Of these 1012 agreed to be interviewed giving an overall compliance rate of 83%.

214 women refused to participate and, of these, 60 (28%) women were 'too busy'; 81 (38%) were 'not interested' and 54 (25%) were either 'ill' or had insufficient grasp of the English language. In the remaining 19 cases, the husband refused on behalf of his spouse although, in most instances, the rejection was made without consulting the woman concerned.

The average length of time per interview was 17.6 minutes (standard deviation 8.3 minutes). 913 women were interviewed alone; 71 in the presence of family and 18 with friends present.

910 women were interviewed at the first attempt; 74 at the second attempt and 18 on the third occasion; four women were interviewed after the researcher visited the property on four separate occasions and, in six instances, the address was visited five times.

6.5.5 Effect of the Advertising Campaign - Questionnaire Analysis

6.5.5.1 Before versus After Analysis

As previously mentioned (Section 6.4.3), low risk areas were over-represented in the post-advertising samples ($P = <0.001$). This resulted in significantly more women resident in the private housing sector being interviewed in the 'after' sample ($P = <0.02$). However, this finding was reflected only in the increased numbers of social classes I to IIIN when classified by the husband's occupation ($P = <0.02$). Had the distribution of the advertising gone according to schedule, the two samples would have been totally homogeneous.

Despite the inclusion of more low risk women in the 'after' sample, there was no disparity between the two groups with regards to screening history and, overall, the 'before' and 'after' populations were consistent with no differences occurring in any of the other demographic variables (age, marital status, educational attainments, parity, and social class as classified by the woman's own occupation).

Nor where there any differences across the two groups in relation to;

(1) familiarity with the terminology used;

(2) the purpose of a cervical smear;

(3) beliefs concerning prevention or curability of the disease;

(4) what the women believed would persuade their friends and/or self to seek cytology;

(5) preference for a female practitioner, or smear venue.

Nevertheless, one finding that could reasonably be attributed to the publicity material was that significantly more women in the post-advertising phase were aware of the location of the nearest smear clinic (Table 6.3 - P = <0.001).

6.5.5.2 Recall of the Advertising Material

The interviewees were initially asked if they had ever seen a poster or leaflet pertaining to cervical cytology. Across the total pre- and post-advertising sample, significantly more women in the latter group answered affirmatively (Chi Square = 56.48, 1df, P = <0.001), and this difference manifested itself irrespective of social class, housing tenure and screening history (Figure 6.4).

The above findings suggest that the advertising reached all sections of the population within the Health District. Further substantiation that the publicity cut across demographic boundaries was provided by the finding that, in the pre-advertising phase, significantly more women in Social Classes I to IIIN had seen a poster/leaflet about cervical cancer (Chi Square = 12.82, 4df, P = 0.0122), as had those resident in the private housing sector (Chi Square = 8.84, 1df, P = 0.0029). However, these effects were not apparent in the analysis undertaken subsequent to the advertising campaign.

Although Figure 6.4 shows that the percentages in the 'after' sample of those women who answered 'yes' to the question of ever having seen some advertising were higher across every classification (screening history, social class and housing tenure) than those who answered 'yes' in the pre-advertising sample, an analysis within each

classification showed that these differences did not attain significance for screening history or housing tenure. However, within the social class data, significantly more non-working women in the 'after' phase had seen a poster/leaflet (Chi Square = 11.58, 4df, P = <0.05).

Nevertheless, despite the finding that there were significantly more women in the post-advertising phase who had seen a poster or leaflet pertaining to the subject, only 306 (58%) of the 526 women interviewed in the six weeks following the publicity could recall ever having seen any literature suggesting that they attend for cervical cytology (see Figure 6.5).

Of these 306 women, 43% said that information had been posted through their door. A further 24% said that they had seen posters and/or leaflets in their GPs surgeries or in a hospital waiting room, followed by 20% who recalled that the material had been displayed in their local area (shops, libraries, housing and DHSS offices). Less than 50% were able to give a description of the poster and only 45% could remember any details of what was said * .

The answers to these questions revealed that only 189 (62%) women of the 306 women who had seen any propaganda relating to cervical cytology, were referring to our posters and leaflets. In 89 (29%) instances, it was impossible to judge whose advertising had been seen, while the remaining 9% were obviously referring to different posters.

Only 48 (25%) of the 189 women who had definitely seen our advertising material, could correctly remember one or more of the messages contained therein.

But, when taken as a percentage of all the 526 women interviewed in the post-advertising phase, only 36% had seen the advertising under discussion and only 9% could correctly remember details.

Across all the women who had been interviewed following the advertising campaign, there was no difference pertaining to social class, housing tenure or screening history with regard to having seen our advertising or remembering its message correctly.

6.5.6 Total Questionnaire Analysis

As there were no major differences determined between the pre- and post-advertising interviews with regards to screening history and, in an endeavour to identify factors

* Although this was an open-ended question, the vast majority of the women (92%) only gave one reply. Thus, in order to determine which details were the most salient, the small number of second replies were ignored.

in compliance for cervical screening, this section refers to all the 1012 women interviewed. In an attempt to present the vast amount of information obtained from the interview study in a cohesive format, Tables 6.4.1 and 6.4.2 summarise the significant findings (P = <0.05) across all the variables classified under the following headings;

(1) Attendance for cervical cytology (see Section 6.5.6.9);

(2) Housing tenure (see Section 6.5.6.10);

(3) Social class * (see Section 6.5.6.11);

In these tables, each category with a boxed asterisk entered in it, denotes that the classification was over-represented in that group to a significance level of 0.05. For example, Table 6.4.1 lists risk categories. The boxed segments under 'Screening History' shows that both lapsed attenders and never attenders were over represented in the high risk wards, while regular attenders for cervical cytology were more prevalent in the low risk wards. Similarly, there were significantly more council tenants to be found in the high risk wards, while private tenants or owner occupiers were more prevalent in the areas designated to be low risk. Two asterisks in a cell indicate that a trend existed (P = 0.06), although this was not judged to be significant.

6.5.6.1 Demographic Details

The mean age of all the women interviewed was 53.1 years (standard deviation 8 years) with the largest single group, forming 29% of the population, being women aged 60-64 years.

72% of the women were currently married (this includes all second and subsequent marriages). 5% of the women had never been married, 8% were divorced or separated and 14% were widowed.

44% of all the women interviewed were resident in local authority tenure housing.

It was possible to determine the school leaving age for 990 women; of these, 57% had left school by the time they were 15 years old and only 15% had reached O'level or higher status.

55% of the women interviewed had either two or three children; 11% had never had a child and 1% had had eight or more pregnancies.

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* Despite the over-representation of Social Classes I to IIIN (when classified by husband's occupation) in the post-advertising phase, the total analysis revealed that there were few differences between husbands' and wifes' occupation on the variables presented in Tables 6.4.1 and 6.4.2. Thus, the classification of Social Class in these tables can be assumed to apply to both codings.

6.5.6.2 General Practitioner Status

All but nine women (0.9% of the total interviewed) were registered with a GP. 77% of the remaining women had access to a female doctor but only 17% said that they always or usually saw her. 26% of the women said that they would always like to see a woman practitioner while a further 15% said they would prefer one to discuss female health matters with.

58% of all the women interviewed said that they would prefer a female practitioner for cervical cytology. 3% said that they would prefer a male doctor and the remainder expressed no preference. No significant differences were determined to exist for this variable across screening history, housing tenure and social class as, without exception, the majority of the women wished for an all-woman cervical screening service.

The average length of time registered with the same practice was 16.3 years (standard deviation 12 years), with over 25% of the women having been with the same surgery for in excess of 20 years. 438 (44%) women said that they saw their GP once a year or less, while 12% said that they saw him/her at least once every month.

A summary of the data relating characteristics of the family doctor to attendance for cervical screening in presented in Figure 6.6.

6.5.6.3 Knowledge Relating to Anatomy and Cervical Cytology

53% of the women were able to define the cervix correctly as an appendage of the womb leading into the vagina. In 26% of cases, a euphemistic reply was obtained ("down below") and 150 (16%) women were unable to offer any definition. 27 women's answers were incorrect ("in the head", "only men have them") and a further 22 women claimed to know what it was but would not elaborate on their answers. Figure 6.7 demonstrates that there were significantly more correct replies obtained when the women were asked to define the neck of the womb (Chi Square = 17.48, 4df, P = <0.001).

97% of the women were familiar with the term 'cervical smear' but only 16% and 11% respectively had heard of the 'PAP' test or the 'cytotest'.

29% of the women defined the cervical smear test in terms of pre-cancer ("abnormal cells which might turn into cancer") but the most common explanation (51%) related to the detection of cancer. An incorrect answer was obtained from 5% of the women

interviewed and a further 6% did not know. The remaining 83 (9%) women were rather vague in their replies and discussed 'abnormalities' without mentioning cancer or its precursor.

Figure 6.8 shows how the 772 women who had ever undergone cervical cytology (1) first became aware of the cervical smear test, and (2) the reason for their first screening. 47% of these women first heard about the test immediately prior or subsequent to their first screening, which occurred as an adjunct to some other procedure. In descending order these were: Well Woman/Family Planning; in relation to pregnancy; symptomatic presentation and prior to surgery.

The majority of the women (53%), however, did know about the test prior to first screening, listing specialist recommendation as the most frequent means of enlightenment. In these instances, cytology had been mentioned by Health Visitors, midwives or doctors, but not necessarily their GP. Advertising in terms of information obtained through the media was the second most common method of communication followed by peer pressure. Only 2% of this group received a letter from their GP inviting them to attend for the service.

Despite knowing about cytology prior to their first smear, 17% of this group were initially screened as an extension of some other procedure. 30% said they sought the service because it seemed sensible to do so; 29% said that it was as a direct consequence of the specialist recommendation, while only 4% were prompted by advertising to seek screening and 11% were pressured by friends or family.

Overall, hospital out-patients and family planning clinics accounted equally for most of the first smears taken (64%), while 20% were initially screened at their GPs surgery and 10% at a Well Woman clinic.

60% of all the women who had ever had a smear found the procedure to be 'OK', while 19% said it was uncomfortable; 13% admitted to being embarrassed and the remaining 8% said that it was either frightening or painful.

6.5.6.4 Knowledge Relating to Cancer of the Cervix

When the women were asked if they knew anything about cancer of the cervix (Table 6.2), there were no significant variations between the responses obtained pre-advertising when compared with those obtained from the post-advertising sample.

But when each question was compared individually across the two samples, three discrepancies emerged. Significantly more women in the 'after' sample spontaneously mentioned first person attendance for screening ('I go/should go/don't go for smears' - P=<0.05), while significantly fewer mentioned that cervical smears detected cancer (P=<0.01). It is possible that these findings are related to the publicity campaign, but due to the over-inclusion of women resident in the private sector (Section 6.5.5.1), it is felt that these results reflect little more than a greater level of knowledge inherent to better educated women.

In other words, across the pre- and post-advertising campaign, no differences were observed in the number of utterances pertaining to attendance for screening or that cervical cytology detected cancer. However, when the variables were compared directly, more of the 'after' sample spontaneously mentioned first person attendance for screening. Bur, significantly more women classified to Social Groups I-IIIN were picked up in the 'after' sample and, among this group, there was a greater general knowledge about the subject and more adequately screened women (see Tables 6.4.1 & 6.4.2).

The final result relates to greater knowledge of treatment of the condition in the post-advertising sample (P=<0.05). This, however, cannot be attributed to the publicity material and is also believed to be a consequence of the sample error mentioned above and the concomitant increase in knowledge indigenous to women in the higher social classes.

Across all the interviews obtained from both samples, 332 women (34% of the interview sample) claimed to know nothing about the disease or had 'never thought about it' and could not elaborate on the subject further. A diagrammatic representation of these findings is presented in Figure 6.9.

The responses obtained from the remaining 658 women can be broken down into two main categories. The first pertains to an awareness of screening, and the second to other, more general knowledge. With regards to the role of cervical smears, 411 women gave a total of 448 replies. 90% of these were related to screening attendances ("I go/should go/don't go for smears"); 3% to the belief that smears prevented cervical cancer, and the remainder to the role of cytology in detecting the disease. The bulk of the multiple answers occurred among women who claimed to attend for screening.

With regards to 'other knowledge' on the subject, 517 replies were obtained from 439 women, with the majority of multiple answers occuring within the 'specific definition' category. This formed 43% of all replies (220 replies from 162 women)

and indicated a greater depth of knowledge pertaining to symptoms ("abnormal/irregular bleeding"), causes ("sex related", "multiple partners", "early pregnancies") and treatment ("laser", "colposcopy", "hysterectomy"). However, only 38 answers were a precise definition ("cancer of the neck of the womb", "abnormal cells on the cervix which could turn into cancer").

49% of the replies (220 replies from 162 women) were classified as either vague definitions ("cancer of the womb", "women's cancer"), or indicating that little more than an awareness of the condition existed in that the woman had heard or read something about it or had discussed it with friends.

8% (42 replies from 38 women) were erroneous ("cancer of the blood", "travels through the nervous system") and, of these, over 60% described cervical cancer as primarily a disease of young women. Most of the replies obtained in this category were short and unclarified.

To paraphrase; of the 439 women who claimed to have some knowledge on the subject, 162 (37%) were able to give specific details; 239 (54%) gave vague replies and 38 (9%) gave erroneous answers.

6.5.6.5 Prevention of Cervical Cancer

No significant differences in the proportion of responses were noted across the pre- and post-advertising groups with regard to the question "do you think that it is possible to prevent cancer of the cervix?" (Table 6.5).

However, two differences emerged when each question was compared individually across the two samples, but neither of these findings can be attributed to the advertising material. In the post-advertising sample, more women said 'yes' but refused to specify as to why they believed that cervical cancer was preventable ($P=<0.05$). This group also believed that sexual practices were implicated in the aetiology of cervical cancer ($P=<0.05$).

Of the 979 women who answered this question, 487 (50%) did either not know or believe cervical cancer to be a preventable disease (Figure 6.10). 27 (3%) answered affirmatively but their reason for their belief was erroneous ("give up sex", "too much rough sex", "give up drinking"). A further 94 (10%) believed that cervical cancer was preventable but refused to elaborate on their answer.

The remaining 371 women (38% of the sample) were able to give one or more correct reasons as to how the disease could be prevented. In all, a total of 527 replies was obtained from this group, the most frequent utterance being related to the early detection offered by the cervical smear test (267 replies - 51%). The next most popular reply (168 - 32%) related to sexual activity and that it was possible to prevent cervical carcinoma by avoiding early sex, numerous partners and early pregnancies. Surprisingly, only 13 (2%) replies referred to the potential carcinogenic effect of smoking.

6.5.6.6 Curability of Cervical Cancer

No significant differences in the proportion of responses were noted across the pre- and post-advertising groups with regard to the question "do you think that cancer of the cervix can be cured?" (Table 6.6). Nor did any differences emerge when each question was compared individually across the two samples.

Of the 998 women * who answered this question, 23% either stated emphatically that cancer of the uterine cervix was not a curable disease, or indicated that they were unsure about whether or not a cure was possible.

However, among the remaining 770 women there was a general belief that the disease was curable, with the most common reason being early detection and treatment (406 out of 843 answers - 48%). In 77 (9%) instances, it was seen as one of the easiest cancers to cure and, in a further 25 (3%) replies, the women said it was curable because they had heard 'experts' say so through the media. This information is presented in Figure 6.11.

6.5.6.7 Ideas regarding increasing screening uptake

No significant differences in the proportion of responses were noted across the pre- and post-advertising groups when the question "If you had never had a cervical smear, what would persuade you to have one done?" was asked. Of the 967 women who answered, 90 (9%) said that they wouldn't seek cytology and a further 28 (3%) said that they didn't know what would persuade them to seek screening. In all, a total of 1112 positive answers were obtained from 869 women.

* The three erroneous replies "cured by cervical cytology" are omitted from Table 6.6.

These details are portrayed in Figure 6.12 and in order of preference it can be seen that the largest number of replies (23%) referred to information. In other words, being given the 'facts', whether through the media, publicity or conventional education was enough, theoretically, to make the women seek the service.

The second largest group (17%) suggested that the women concerned would certainly seek the service if they were symptomatic, whereas 15% of the answers suggested that screening would occur if it were recommended by an 'expert' (in other words, anyone with a medical background). A further 15% of the comments imply that fear of the disease and its possible outcome would persuade some women, while 12% replies referred to the motivating effect of peer pressure. In 10% of instances common sense was judged to be sufficient, but in only 1% of replies would the knowledge that the disease was curable prompt a woman to be screened.

The advertising campaign also failed to have a significant impact with regard to the responses obtained to the question "Can you think of anything that would persuade your friends to have a cervical smear?". 17% of the 954 women who answered this question either said that their peers would be too frightened to seek screening, or that they didn't know what would persuade their friends to seek the service.

Of the 1035 positive suggestions that were elicited from the remaining 796 women, the most common means of recruitment was seen to be 'peer pressure' (25%), followed by the idea that information alone would make women seek the service (21%). The idea of frightening their friends into attendance ("take them through a cancer ward") was also popular (20%).

The notion that women would seek the service only if they were symptomatic was not without its advocates and it was as popular as the perception that women would only attend if it was recommended by an 'expert' (9% in each case). 81 replies (8%) stated that common sense should be a sufficient motivator in itself.

A comparison of the above two questions revealed that there was little concordance between what the women believed would persuade them to seek the service and what would persuade their friends (Chi Square = 109.36, 8df, P = <0.0001). The only areas where there was no disagreement was with regard to early detection of the disease.

Overall, the results portrayed in Figure 6.11 suggest that the women regarded themselves as more rational and open to persuasion than their friends. In other words, they would seek screening because it was common sense to do so, particularly if it were recommended by an 'expert', or if they were symptomatic or, simply, on the

basis of information received. Their friends, however, needed to be bullied by their peers or family, or frightened into attending for screening. The knowledge that the disease was curable was also seen as an incentive for others to seek screening.

These differences in beliefs, about what would cause the woman to seek screening and what would persuade her friends to seek the service, was maintained over all the deprivation indices used. Thus, irrespective of housing tenure, social class or previous attendance for cervical cytology, the women believed that either having symptoms or being advised by an 'expert' would persuade them to seek the service whereas, 'peer pressure' and 'fear of/personal contact with the disease' would persuade their peers to be screened.

6.5.6.8 Screening Preferences

96% of all the women who expressed a preference (58% of all the women interviewed) said that they would prefer a female practitioner for cervical cytology. No significant differences were determined to exist for this variable across screening history, housing tenure and social class as, without exception, the majority of the women wished for an all female service.

Of the 993 women who expressed an opinion about the screening venue, 439 (44%) said that they would prefer a specialist clinic; 304 (31%) said they didn't mind and 250 (25%) said that they would prefer to go to their GPs surgery.

680 (68%) women knew where the nearest clinic that offered cytology was. 23% did not and, for the remaining 96 women, the information was judged to be unnecessary as the woman concerned was either regularly screened elsewhere (GP's surgery or privately) or had undergone total hysterectomy (Table 6.3).

6.5.6.9 Summary of Screening History (see Tables 6.4.1 & 6.4.2)

It was possible to determine the screening history for 997 women across the total sample interviewed. 46% of the women were regular attenders for cervical cytology and, including those who had received their first smear within the preceding five years, 50% were adequately screened for cervical cancer. 32% required screening and 173 (17%) had undergone total hysterectomy. Eleven women had undergone sub-total operations and were left with an intact cervix. They were therefore classified according to their screening history and included in the above percentages.

6.5.6.9.1 Women with intact cervices

Of the 824 women for whom cervical cytology was appropriate, 462 (56%) were regular attenders for the service; 172 (21%) had not had a cervical smear for an interval greater than five years and a further five women (1%) had recently re-entered the system following an interval greater than five years between their last two cervical smears. 152 women (18%) had never been screened for cervical cancer. Combining the 'never' with the 'lapsed' attenders, 39% of the women were inadequately screened for cervical cancer.

This inadequately screened group of women were more likely to live in council housing (Chi Square = 41.26, 1df, P = <0.0001); to be either widowed, divorced or separated (Chi Square = 17.81, 3df, P = <0.001) and of a lower social class, or not working, (husbands occupation: Chi Square = 44.56, 4df, P = <0.0001; woman's own classification: Chi Square = 44.51, 4df, P = <0.0001) than those women who were screened regularly. They had left school at an earlier age (Chi Square = 68.32, 4df, P = <0.0001) and not done any further studying since this time (Chi Square = 51.33, 2df, P = <0.0001). They were also more likely to be childless (Chi Square = 14.53, 5df, P = <0.02).

This information is summarised in Figures 6.13.1 & 6.13.2 which present the figures as a percentage of the total within each age-group. For example, 76% of all the women aged 40-49 years were adequately screened whereas the corresponding figure for those aged 50 or more was 49%.

Women who had never been screened were, on average, older (57 years) than those who had not been screened for an interval of more than five years (55 years) (independent t test = 2.74; 317 df; P = 0.006). The lapsed attenders, in turn, were significantly older than those women who were screened regularly (48 years) (independent t test = 6.67; 624 df; P = <0.0001).

Women who were regularly screened for cervical cancer were the most likely to have access to a female GP, while those who had never had a smear were the least likely to see a woman doctor (Chi Square = 43.62, 1df, P = <0.0001). This latter group of women who had never been screened had been registered with their doctor for the shortest mean interval (under five years), and were also the least likely to seek the services of their GP, seeing him/her, on average, less than once a year (Chi Square = 22.9, 8df, P = <0.01). The lapsed attenders were also infrequent visitors to their family doctor but, for them, the average length of time registered with a practitioner was in excess of 25 years (Chi Square = 24.8, 14df, P = <0.05). This information is summarised in Figure 6.6

68% of the regular attenders had had four or more smears, and 76% had been screened within the preceding two years. Only 11% of the lapsed attenders had been screened on as many occasions with the majority (54%) having had only one smear. Nearly all of this latter group said that they only had it done because they were symptomatic. However, no difference in attitude towards having a smear taken was discerned between the lapsed and regular attenders with the majority (58%) saying that it was 'OK'; 21% found it to be uncomfortable and 13% said that it was embarrassing or frightening.

62% of all women who had ever been screened had been informed, or had found out, the result of their last test. In other words, 38% had believed that "no news was good news".

When both the lapsed attenders and the never attenders were asked if there was any reason why they had not had cytology, no difference was discerned in their replies with, in both cases, the largest single reply being 'no excuse' (44%). 16% of the women admitted to 'laziness'; 15% offered excuses ('too busy') and 11% said that they were either too embarrassed or disliked the procedure (or the idea of it). However, when asked if they should have a cervical smear, a very distinct difference emerged ($P = <0.001$) with the lapsed attenders saying 'yes' they should be re-screened, while the never attenders were either uncertain or quite definitely against the idea.

The women who were regularly screened were better informed across all questions pertaining to cervical cytology and the terminology used. The never attenders did not know the purpose of the cervical smear test, while the lapsed attenders believed that it was to find an existing cancer. The regular attenders, however, believed that it was to determine a precancerous condition.

The inadequately screened women were also more ignorant about the anatomy involved; the never attenders were equally unfamiliar with both terms used to describe the *cervix uteri*, although the lapsed attenders were more familiar with the term 'neck of the womb'.

Women who were regularly screened for cervical cancer believed that cytology should be performed annually but qualified their answers saying that it depended on age and sexual habits. The inadequately screened women had no idea about how often screening should occur.

The majority of women, irrespective of screening history, expressed a preference for a female practitioner. However, the regular attenders did not mind where the procedure was performed while the lapsed attenders cited a specialist clinic and the never attenders, their GP's surgery.

Regular attenders believed that peer pressure, common sense and information would persuade their friends to seek cervical screening, while lapsed attenders believed that fear would act as a deterrent to having a cervical smear. All the inadequately screened women believed that symptoms would persuade their peers to seek the service.

When asked what would persuade them to be screened if they had never had a smear test, the regular attenders cited information and fear as an incentive, while the lapsed attenders said symptoms would make them seek the service. Those women who had never been screened were the most emphatic that nothing would persuade them to have a smear test.

6.5.6.9.2 Women who had had Total Hysterectomy

173 (17%) women had undergone hysterectomy involving removal of the cervix uteri. In 17 (2%) cases the operation was performed for severe cervical abnormalities. The average age at hysterectomy was 43 years with 74% of the women undergoing the procedure between 36-50 years. Women who had undergone the procedure were more likely to be resident in council housing ($P = <0.01$) and classified (by their own occupation) to Social Class IV or V ($P = <0.001$).

It was possible to determine the previous attendance for cervical cytology for 100 of the 173 women who had undergone hysterectomy. These women had significantly fewer smears than the women with intact cervices ($P = <0.05$) with 30% having had one smear only, and this done prior to surgery. Indeed, most of them became aware of the procedure prior to surgery or because they were symptomatic.

6.5.6.10 Summary of Housing Tenure (see Tables 6.4.1 & 6.4.2)

Across all the women interviewed, 1008 women were classified according to their housing tenure. 44% were resident in council housing and, overall, the results for housing tenure closely mirrored those already presented for screening history but reading local authority tenure housing in place of the inadequately screened women.

What dissimilarities did exist were concerned primarily contact with their family doctor. There were no differences across tenure with regard to access to a female doctor, nor with regards to the number of years registered with a practice. However,

women living in council housing saw their GP every two months while their counterparts in the private sector only visited their family doctor annually (P = <0.001).

Council residents were more likely to find having a cervical smear to be an embarrassing or frightening experience (P = <0.001). Once again, the majority of women expressed a preference for a female practitioner but there was no difference across housing tenure about where they wished the procedure to take place.

Women resident in the private sector were more aware of the vicinity of their local clinics in the pre-advertising interviews. In the post-advertising phase, however, the situation had reversed with the council tenants being the most aware.

6.5.6.11 Summary of Social Class (see Tables 6.4.1 & 6.4.2)

All of the women interviewed were asked to describe their own occupation and, if appropriate, that of their spouse. These descriptions were coded to Social Class as described by the Registrar General's Classification of Occupations 1980 edition. All of the women who were either without a job or not working due to family commitments were classified to the 'unemployed/not working' classification as were all the men who were without employment (i.e. unemployed, invalid or retired).

It was impossible to trace the accuracy of the women's statements regarding both their own and their spouse's occupation and the following are based solely on the women's verbal descriptions.

1005 women were classified by their own jobs and 702 by the occupations of their respective spouses. Unless otherwise stated, the following conclusions and those listed on Tables 6.4.1 and 6.4.2 can be assumed to have held for both sets of classification; that is, both the husband's occupation and the women's own jobs.

Only 429 (42%) women worked. Of these 28% were coded to Social Class I and II; 31% to IIIN and 6% to IIIM. The remaining 151 women formed the largest group (35%) and were classified to Social Classes IV and V. It was possible to determine the occupation of 476 spouses, of whom the largest group was Social Classes I and II (45%). When the social class of these men were cross tabulated directly with that of their working wife, overall, like appeared to have married like (P = <0.0001).

Attendance for cervical cytology increased with social standing with significantly more women in Social Classes I to IIIN having been screened within the preceding five years while there were more inadequately screened women in the unemployed/not working classification.

As previously mentioned, women classified by their own occupations to Social Classes IV and V were more likely to have undergone hysterectomy, although the age at which the operation was performed was unrelated to social standing.

Among the women who had ever received cytology, the higher the social status the more smears the women were likely to have received. Based on what the interviewers were told, women in combined Social Class I/II appeared to have had at least 5 smears, while those in the unemployed/not working category seemed to have only been screened once.

There was a trend towards women in Social Class IV/V not having access to a female practitioner ($P = 0.06$) and, for those women in mixed practices, the frequency with which the woman doctor was seen decreased with status. In addition, the higher the social class, the shorter the time registered with the GP. There was an inverse relationship between social class and frequency with which the GP was seen with the higher social classes (I/II) seeing their family doctor less than once a year, while the unemployed/not working classification saw their GP at least once a month.

The remaining findings were as described for screening history but reading Social Classes I to IIIN for regular attenders, Classes IV and V as lapsed attenders, and the unemployed/not working classification as never attenders.

6.6 Discussion

6.6.1 Deficiencies in the Advertising Campaign

6.6.1.1 Flaws in the Publicity Material

The use of a professional advertising agency was a mixed blessing. On the one hand their advice, particularly about the format of the posters/leaflets and their financial input was extremely welcome. But, commercial advertising is usually directed towards the channelling of pre-existing behaviour patterns or attitudes, and does not generally attempt to forge new attitudes or create new behaviour patterns [233]. In other words, Saatchi and Saatchi do not concentrate their efforts on persuading non-smokers to take up smoking, but rather to persuade the existing smoker to switch to another brand. If an advertising campaign can persuade 1% to 1.5% of existing cigarette smokers to change to the publicised brand, the cigarette company can expect an increase in revenue in excess of $100 million [234].

Advertising in the health field is very different, and the practices of commercial advertising are not applicable since the criteria for success is so disparate. In the commercial sector, a company can be successful even if a small number of people buy its products; in selling health, the individual is asked to follow a particular preventive practice at regular intervals for the rest of her life.

Despite the fact that the publicity material was of an extremely high standard and received much acclaim within the advertising world, it was felt that the advertising macrocosm was very different from that of the women who needed to be recruited for cervical cytology. With hindsight, several important omissions were made with regard to the design of the poster/leaflet.

These 'errors of omission' related, primarily, to the four runner up designs from the competition. All were felt to be particularly relevant to women in the age group concerned * and, along with the winning entry, should have been tested on a pilot target population. This would have allowed for;-

(1) the influence of the posters in terms of their visual effectiveness to be gauged;

(2) their potential to recruit a woman for cytology to be assessed; and,

* One was a large photo portraying a girl's 18th birthday but with the mother conspicuously absent and the message reading "a cervical smear could save your life". Another photograph showed a middle aged woman looking very distraught with the caption stating; "If I had known that I could have stopped it then, I wouldn't have it now". A third showed two middle aged women gossiping outside a supermarket - the heading stating "surely not at our age" and the fourth runner up portrayed a dictionary definition of cervix and cancer.

(3) the actual understanding of the semantic content of the messages contained in the publicity material to be evaluated.

This last point is important since it is believed that the problems of illiteracy were underestimated in this study. Although not quantified by the questionnaire, the interviewers felt that many of the women encountered would have problems understanding both the wording and the content of the leaflet. This 'intuition' was supported by a survey conducted in the year following the publicity which showed that 7 million people in Britain had difficulty in reading a simple fire warning [235]. The messages contained in both the poster and leaflet were much more complicated than the warning mentioned in the above study, and the level of comprehension required was, therefore, substantially greater.

Although the women interviewed were not asked what they thought of the publicity material (another omission), it was approved by the District Medical Officer, the Local Medical Committee, and representatives of the Family Planning doctors and Community Health Council. Overall, the winning poster was judged to have had many merits. It combined the threat of the disease with humour and established the two in an every-day phrase ("died of embarrassment"). It emphasised preventability of the disease while stressing the at risk age group. It was eye catching, and the quality of the art work and the paper used was of an extremely high standard. This last point was felt to be particularly important since the advertising, indirectly, carries a message about the sender. Appropriate, readable, good quality materials will increase credibility, whereas poorly produced, inappropriate materials will just as surely damage it.

6.6.1.2 Flaws in the Interview Study

The interview sample might well not have been representative of the total female population 40-64 years in the chosen wards. A comparison of the sample age distribution with that contained in the 1981 Census Data for the interview wards showed that women towards the upper end of the age range were over-represented among the former. However, the information gleaned from the Small Area Statistics was six years old and, therefore, also not likely to be a true indicator of current population.

Nevertheless, there was some unquantifiable error in the age distribution of the women interviewed but, this over-representation resulted from factors beyond the control of the interviewers. Women aged 60-64 years were the most likely to be at home, and week-end and evening interviewing, although encountering a higher

proportion of younger women, was discontinued due to the high number of refusals obtained. It was obvious to the interviewers that these women were genuinely busy with family and household chores.

As a consequence of these factors, the planned experimental design of this study was not realised but only approximated, and the field situation was found to be largely uncontrollable. However, since there was no age difference discerned across the pre- and post-advertising samples, and as the older women are known to be at greater risk of contracting cervical cancer by virtue of their age and poor screening attendances, it was decided that their over-inclusion might offer more insights into reasons for non-screening and response to the advertising than if the sample were composed of predominantly younger women.

6.6.1.3 Flaws in the Questionnaire

The questions used to gauge any effect that the publicity material might have had on attitudes towards cervical cytology were too superficial. Furthermore, they did not attempt to explore any of the psychological factors involved.

The questionnaire was developed using a qualitative approach, using open-ended questions in a standard questionnaire. The responses of the women interviewed in the first pilot study were subject to content analysis, and what they said was used as the baseline for the final questionnaire. However, with hindsight, it is felt that the range of information obtained in the first study was too limited.

A better approach, in the initial stages, would have been to use qualitative small group discussions where six to eight women in the target age range and from a cross section of social class, were brought together in an informal setting, under the direction of a group moderator. They would be asked to discuss in depth the topic under question and their comments would have been subjected to content analysis in the same way as the initial interviews, and formulated into a questionnaire. This is a technique derived from market research [236] which is being more widely adopted in the social sciences [237-239].

Another error of omission from the questionnaire was that the women interviewed were not asked if they saw themselves at risk of contracting cervical cancer. If an individual doesn't view herself as being at risk from a particular disease, then any leaflet or poster would not be seen as having any implications for her own behaviour, and susceptibility to a disease has often been found to be a crucial factor in initiating preventive behaviour [240-244]. Paradoxically, there are also studies which show a negative correlation between susceptibility and preventive behaviour [245-247].

Such findings are not necessarily contradictory and can be reconciled [248]. In psychological terms, seeking preventive measures can be classified as coping behaviour, whereas refusing to initiate preventive behaviour results from such psychological defense mechanisms as denial and repression. This sort of situation arises when the individual is ignorant of the ways of coping with the threat, or assumes that the coping will involve a very high cost. This suggests that susceptibility to a disease is only effective in cultivating preventive behaviour if the individual is offered readily available alternatives which will enable her to control the situation. When this happens, the consequence of preventive behaviour is not perceived as stressful, and hence being less 'costly'.

But, this assumes that individuals generally believe that they have some measure of control over their own destiny and, one psychological avenue worth exploring is the notion of Internal versus External Locus of Control [249]. This index measures the perceived control that an individual has over her life and environment. In other words, whether she views her actions as being under her own control, or under the influence of some external agency.

The relevance of 'Locus of Control' was demonstrated, in particular, by the women resident in local authority housing. Among these individuals the interviewers were struck by the widespread belief that the *raison d'etre* of official bodies was to take care of them; the council provided housing and maintenance thereof; money was forthcoming from the state, and their family doctor was there to look after their health. In short, the Welfare State was there to care for them, literally, from the "cradle to the grave"!

These women would be defined as 'externally oriented', and evidence suggests that they would be less likely to comply with medical advice subsequent to the diagnosis of disease than their 'internally oriented' sisters [250]. A logical extension of this finding would be that the women who saw their behaviour as being governed by external forces would not seek cytology as the outcome was predetermined and impossible to change. Indeed, this fatalistic view was widely held among the inadequately screened women.

If, on testing, such a hypothesis was found to be correct, further measures such as the qualitative group discussion must be used to isolate views that are particular to this group, and such findings incorporated in subsequent advertising material. Furthermore, the use of such methods would serve to identify smaller groups than the blanket 40-64 year olds that were targeted by the Richmond, Twickenham and Roehamptom advertising campaign.

Such a study would go further than the work under discussion in determining the effectiveness of advertising in a print media as a recruitment method for cervical cytology.

6.6.2 Effects of the Advertising Campaign

6.6.2.1 Interviewing Response Rates

The interviewing response rates were considerably higher than suggested by the first pilot study and the required number of interviews was exceeded. Nevertheless, women in the target age range were found in only 13 out of every 100 properties visited and, in all, almost 9500 properties were approached - many on more than one occasion. Overall, 83% of the women aged 40-64 years who were encountered agreed to be interviewed, and only one woman refused to complete the interview. This response was particularly gratifying as the questionnaire took almost 20 minutes to complete.

It must also be remembered that the interviews were conducted in far from ideal situations; usually on the doorstep, often in inclement weather and when the interviewee was in a hurry. The relative success of this part of the study derives in some small part from the rapport established between the two participants. Indeed, any such interview is an interactive situation and a successful outcome is dependent on such a relationship being established [251-253]. Thus, although the presentation and format of the interview was constant across all the interviewers, it was felt that to present a severely standardised interview with all movements/facial expressions/interactions determined and controlled for by training might well have resulted in not only a significantly lower completion rate, but would probably have failed to elicit many of the comments obtained on this highly emotive and, to many of the participants, embarrassing issue. In addition, the decision was made to answer all questions pertaining to cervical cytology that the interviewee might have subsequent to the questionnaire being complete, and details of clinics were also issued if requested.

This lack of rigid standardisation could allow for criticism relating to interviewer bias; that is, the interviewer's own beliefs about the subject being mirrored in the replies obtained from the interviewees. But, when the results obtained from each interviewer were directly compared, there was no evidence to suggest that this was the case. Nevertheless, the relative informality of the interview situation leaves us open to admonishment by purists although, it is believed, that the wealth of information obtained more than offsets such possible criticism.

While the criticism of interviewer bias is unlikely, there is little doubt that, during the post-interview discussion, the interviewers did have an effect on screening attendances and attitudes towards screening. It was not possible to quantify scientifically this upshot but it is known that at least ten previously unscreened women did seek the service as a direct consequence of the interviews. In eight cases, the interviewers were approached at a later date by the new recruits and, in two instances, we were informed by post. All of these women had stated at the completion of the interview that they would attend for screening.

Of the 1012 women interviewed, 9 (0.9%) were not registered with a family doctor and, of course, these women would fall outside of any call/recall scheme implemented by the Family Health Service Authority.

6.6.2.2 Recall of Advertising Material and Screening Attendances

The unexpected delivery of the leaflets half-way through the 'before' interviewing in one of the wards designated as 'low risk' meant that there were more higher status women living in the private sector interviewed in the post-advertising phase. Despite this, there was no significant increase in the proportion of adequately screened women following the publicity campaign, suggesting that the advertising was of little use in recruiting women for routine cervical cytology. Nevertheless, the advertising was extensive and appeared to have achieved sizeable coverage across both council and private housing.

In the pre-advertising phase, women classified by their own occupations to the higher social classes, or those resident in the private sector, were more likely to have seen some advertising relating to cervical cytology than their counterparts who were not working, or who lived in council housing. This is in line with other studies which suggest that advertising is likely to reach persons of a somewhat better socio-economic status and educational attainment [254-256], as well as reflecting the better screening habits among this group.

In the post-advertising phase, the publicity material was viewed equally across all groups, and a comparison of the pre- and post-advertising groups showed that significantly more non-working women had seen some publicity in the post-advertising phase. So, it seems that this particular campaign was successful in reaching a significant number of non-working women who were also the least adequately screened for cervical cancer. Furthermore, across all the risk categories, there were no differences with regard to the recall of the posters/leaflets used, or the message contained therein.

In spite of the apparent success in the distribution of the advertising material, the recall of the posters/leaflets was disappointing. Only 306 of the 526 women (58%) interviewed following the publicity could recall having seen any form of advertising, and less than 30% of these correctly described the leaflets/posters as monochromic.

The most frequently remembered message was that the advertising listed where to go to obtain the service (28%), followed by the slogan "died of embarrassment" (26%), who should be screened (18%) and the number of deaths per year (16%). However, the latter point was often incorrectly remembered with one interviewee stating that the annual death rate from cancer of the *cervix uteri* was two million! But, such erroneous statements are not confined to the lay woman. The British Medical Journal has been known to state "of the two million women who die annually (from cervical cancer) most had never been screened" [257].

Overall, among the women who had seen some advertising, more recalled that a leaflet was posted through their door (43%), than had seen posters in their local area (20%). This appears to suggest that leaflets are a more effective means of communication than posters in the age group 40-64 years.

When all the descriptions of the posters/leaflets viewed where taken into account, 9% of the women interviewed post-advertising (who answered positively when asked if they had ever seen a poster or leaflet pertaining to cervical cytology) were obviously referring to other posters, most commonly the Women's National Cancer Control Campaign's "all women are attending for the cytotest". These had been displayed in a large shopping precinct on the boundary of the Health District, three months prior to the start of this project.

The verbalisation of the posters and/or leaflets were so confused and imprecise that it was impossible to determine the source of the advertising material in 29% of the cases. The remaining 62%, however, were referring to the publicity campaign under study. But, only one-quarter of the women in this latter group were able to correctly remember one or more of the messages contained therein.

The finding that 62% of women had seen our advertising and 25% of these were able to accurately recall the details it contained is actually quite encouraging. But, these are percentages of the women who, subsequent to the campaign, had ever seen a poster or leaflet. When compared across the total of all women interviewed in the post-advertising phase, the number who had seen our poster/leaflets dropped to 36% and only 9% correctly recalled the information listed. In addition, only 25% said that a leaflet had been posted through their door.

Although not quantified scientifically, the majority of women who professed to never having seen the advertising material were asked if they had received the free newspaper which contained the leaflet. Many said they had, but added that it was immediately thrown away along with all unsolicited mail. This latter point suggests that the distribution of the leaflets along with the free newspaper, although covering a large area, was not an effective means of attracting the attention of the target age group.

6.6.2.3 Clinic Attendances

The finding resulting from the interview study that the advertising was not effective in persuading women to seek screening was substantiated by the analysis of the clinic attendances. In only one ward (Roehampton - the second pilot study) was there an increase in screenings which correlated directly with the advertising campaign and, this was also the area where the poster displays were most prominent. There was only one shopping area which fell at the junction between the three areas of council housing and for a period of two weeks every single shop displayed our poster and/or had copies of the leaflets on the counter. Nevertheless, advertising alone is not felt to be responsible for this uptake and other factors are believed to be involved.

In particular, although this was an area of high density council housing, it was very different from other estates visited. Roehampton Vale was originally conceived as an ideal in social planning and received much publicity and acclaim in its formative years. The high rise blocks command an impressive view of Richmond Park, are well supplied with amenities and are seen by their residents as desirable properties. Indeed many had bought, or were in the process of buying, their flats. There were a large number of extended families living in close proximity with the consequence that an extensive communication network existed. The interviewers became known as the "cancer women" and their movements watched with much interest.

In addition, as this area was intended as a pilot study, both pre- and post-advertising occurred within the same ward* . Thus, the three clinics offering cytological facilities in the vicinity must have screened any of the women who were persuaded to attend for cytology by virtue of the pre-advertising interview alone. As the 'before' and 'after' advertising interviews happened within a short space of time, any women

* A total of 235 women were interviewed: 132 prior to the advertising campaign and 103 following the distribution of the publicity material. According to the 1981 Census Data, these women represented just under 20% of the female population aged 40-64 years resident in Roehampton Ward.

who sought screening during the pre-publicity phase would be confused with those who sought screening as a direct consequence of the advertising. There was no way to distinguish between the two groups.

Another confusing factor was that, in this ward the leaflets were sent out with official council information, instead of via a commercial mail drop. It is plausible that this method of distribution was more successful since it came from an authoritative source, rather than an unsolicited free newspaper which, as stated above, was often immediately discarded.

A further problem in the evaluation of the clinic attendances was that it was difficult to know how great the effect would have been had the 'Oxford Incident' not served to distort the comparison baseline data but it is felt that the outcome would have been of little greater prominence, particularly in the older women (50+ years) who appeared to be little moved by the adverse publicity.

6.6.2.4 Attitudes Towards Cervical Cytology

Although the publicity campaign appeared to have no appreciable effect on the knowledge, attitudes and beliefs of the target population, it has, regardless, offered some insights into why women don't seek screening and their feelings towards the subject.

Lack of knowledge about the subject appeared to be a major problem. One-third of the women interviewed professed to have no knowledge of the disease and one-half were unaware that it was a preventable condition. There was also doubt about whether it could be cured among a significant faction.

Only 53% of the women interviewed could correctly identify the cervix. There was more familiarity, however, with the term 'neck of the womb', with 58% of the sample defining this correctly. While 97% claimed to have heard of a cervical smear, over half of these saw it as a test to determine the presence of cancer, and only 29% talked about the detection of a pre-cancerous condition.

Overall, ignorance about the subject increased with decreasing use of the screening services. So, women who were regularly screened were the best informed while those who had never had a smear were the most ignorant. Among this latter group, there were more women who were unable to identify either the cervix or the neck of the womb, nor were they aware of the purpose of a cervical smear. The women who had never been screened were also the most resistant to having a smear, and obviously the most frightened by the idea of cervical cancer. This finding adds no

credence to the view of many women that frightening their peers would persuade them to seek the service, but it is in line with existing evidence that such appeals are not effective [178,179].

Women who had at some time received cytology but had fallen out of the screening programme were more likely to view cervical cytology as a 'cancer test'. They were, however, more amenable to the idea of re-screening than the never attenders. But both groups believed that they would be contacted by their family doctor if such a test was necessary.

There was a marked difference between what the women believed would persuade them to be screened and what would persuade their peer group. This was a consistent finding that held across housing tenure, social class and screening history. Overall, 12% of the women interviewed said that they would either not seek cytology or did not know what would persuade them to do so. The corresponding figure for their peer group was 17%.

It is difficult to judge the significance of the finding that women see themselves as different to their peers with regards to recruitment for cervical cytology. The rationale for asking both questions was that the women might be keen to live up to the expectations of the interviewer and could, therefore, furnish replies that she (the interviewee) believed that the interviewer wanted to hear. Thus, it might be expected that a more honest reply would be obtained by speaking about others. The data can be interpreted to verify this hypothesis since, overall, the 'self recruitment' offers a more logical approach to the subject with the women, in effect saying "yes, if I knew about the test or if it was recommended by a doctor or if I had symptoms, it would be common sense to go". The 'peer recruitment' offers a slightly less reasonable angle. "I would go if my friends persuaded me, and if I knew the disease was curable, or if I knew someone who had cervical cancer".

However, this is speculation and the more interesting finding is that early detection of the disease was seen as a strong inducement to seek screening for both self and other. But, this point was strongly emphasised in the advertising to no apparent effect!

Across the entire interview sample, 824 women should have received regular screening. But, 39% had either never been screened or had not received cervical cytology for an interval greater than five years. This inadequately screened group of women were more likely to be resident in local authority tenure housing; to be either widowed, divorced or separated and of a lower social class, or not working,

than those women who were screened regularly. They had left school at an earlier age and not done any further studying since this time. They were also more likely to be childless.

Women who were regularly screened for cervical cancer were predominantly aged under 50 years and were significantly younger than those who had fallen out of the screening system. The oldest women, however, were those who had never had cervical cytology.

56% of all the women screened first received cervical cytology as an adjunct to some other procedure and, 84% of this group said that it was their first introduction to the subject.

There was a distinct relationship between GP services and attendance for cervical cytology. Women who were regularly screened for cancer of the uterine cervix were the most likely to have access to a female GP, while those who had never had a smear were the least likely to see a woman doctor. The never attenders had, on average, been registered with the same practice for less than five years, and were also the least likely to seek the services of a family doctor seeing him/her less than once a year. The lapsed attenders were also infrequent visitors to their family doctor but, for them, the average length of time registered with a practitioner was in excess of 25 years.

96% of the women who expressed a preference about the sex of the screening doctor stated that they wanted a female practitioner. Similarly, 64% said that they would prefer to go to a specialist clinic in preference to their GP's surgery.

6.6.3 How Effective Should the Campaign Have Been?

The current AIDS epidemic has led to a plethora of health education publicity, both in the form of posters and/or leaflets as well as a mass media television and newspaper campaign. During the spring of 1986 (coinciding with some of the advertising in RTR Health District), the DHSS ran a newspaper advertising campaign warning about HIV infection and listing preventive measures. This was found to have done little to increase the knowledge of 'the man on the street' [258]. Indeed only 31% of people interviewed in one study claimed to have seen the advertisements [259].

In January 1987, massive television advertising occurred in conjunction with a leaflet campaign. The message of the leaflet which was delivered to all households in

Britain was "AIDS - don't die of ignorance" * . In Southampton, 300 postal questionnaires were distributed prior to the television and leaflet campaign. The response rate of 69% detected a small overall increase in the knowledge about AIDS over similar surveys conducted in February and June 1986 [260]. The authors concluded, however, that "even before the television advertisements, the intense media coverage of AIDS seems to have resulted in an increase in the level of public knowledge".

Various groups attempted to assess the actual benefit of the campaign. In Oxford, 600 telephone interviews were conducted pre- and post-advertising [261]. 78% of the sample agreed to be interviewed and, of these, 38% recalled having received a leaflet. No difference in knowledge was detected across the two samples.

Paddington and North Kensington Health District diagnostic virology unit reported a 92% increase in primary screening tests between November 1986 and February 1987 [262]. A further 56% increase in February and March was a direct consequence of 'Media AIDS Week' which occurred during February 1987 when almost saturation coverage was achieved! However, the authors concluded that the benefits of raised general awareness was probably outweighed by the costs of the tests on those people who did not need them. During 'Media AIDS Week' there was a 352% increase in individuals with no known risk factors seeking the service and, furthermore, from August 1986 to April 1987, no patient in this group was found to be HIV sero-positive.

Thus, many of the problems encountered in the RTR advertising study, and the results achieved are not unique to cervical cytology. Even with a budget of £2.5 million, advertising by means of a leaflet or poster did little to increase knowledge about AIDS and even less to promote behaviour change. Massive media coverage might nominally increase the knowledge of a subject but only causes those individuals who are in a low risk category to seek screening. Furthermore, there is concern that, unless publicity is sustained many of those who need testing, or re-testing, may not come forward.

6.6.4 Recommendations for Future Advertising Campaigns

The inescapable conclusion from the above studies and from the apparent ineffectiveness of the RTR publicity campaign is that advertising health matters in a print media is a waste of time and money. Notwithstanding, public education is a necessary and important component in the attempt to lessen the adverse effects of many health

* This, incidentally, was also one of the three entries submitted by the eventual winners of the cytology advertising competition. The full slogan read "A lot of women don't know about cervical smears - last year 2000 women died of ignorance". The third entry was "A lot of women are frightened to have a cervical smear - last year 2000 women died of fright".

related problems. This is particularly true for cervical screening in which early diagnosis is critical for successful treatment, and where a woman's habits can affect the probability of her developing the disease.

Nevertheless, interpersonal contact is necessary to supplement the use of mass media [233], and both behaviour and attitude change require personalized communication [117,124,263]. Thus it appears that advertising alone can do little more than create a climate of opinion and, in order to be effective, it must be combined with health promotion work at other levels. For example, programs based on well defined tenets of behaviour change that combine individual or small group contact with highly specific reinforcement through the mass media need to be assessed as a potential prototype.

In addition, media other than posters and leaflets should be explored. The recent AIDS campaign, and others relating to female health matters, have demonstrated that television messages increase awareness about a subject more than other media, although radio is also effective [126]. There are few households without either and, by virtue of the programmes presented, targeting a particular sub-section of the population is not difficult.

However, irrespective of the type of media campaign used, the following points are felt to be particularly relevant.

(1) All of the publicity material must be relevant to the target group concerned *and designed in conjunction with them.*

(2) The advertising must offer highly specific reinforcement and take into account such psychological factors as 'Locus of Control'.

(3) Levels of literacy must be determined and the information presented accordingly, again following exhaustive pilot studies.

(4) Female clinicians and specialist units should be emphasised and listed in any promotion material.

(5) If leaflets are used they should be distributed separately from commercial mail drops and, if possible, in conjunction with some missive from a known authoritative source.

(6) Advertising needs to be sustained over a long period of time, or run at frequent, pre-determined, intervals.

(7) Finally, and most importantly, all advertising must be combined with individual or small group contact.

6.7 Conclusion

The coverage obtained by the publicity material was substantial and although it appeared to reach all sections of the female population, particularly those most in need of cervical cytology, it had a significant impact on screening attendances in only one of the 26 wards where advertising occurred. However, the increase in clinic attendances was felt to be influenced by other factors, occurring simultaneously and in conjunction with the advertising.

An independent advertising consultancy were asked to evaluate the cost of this work and estimated that their charge would be in the region of £25,000. In view of the negligible effect that it had in recruiting women to seek the service, or in influencing attitudes or increasing knowledge about cervical cancer, it was not an economic use of funds!

Table of Tables

Table 6.1: ADVERTISING STUDY – CLINIC RESPONSES
Attendance for Screening by Age; Pre– & Post– Advertising

Age	Screening Attendance: Before Advertising		After Advertising		Totals
Under 40 yrs	2998	50.5%	2934	49.5%	5932
	63.5%		62.9%		63.2%
40 yrs & over	1725	50.0%	1728	50.0%	3453
	36.5%		37.1%		36.8%
Totals	4723	50.3%	4662	49.7%	9385

Hypotheses

H0 The proportion of women classified to the the 2 alternative age categories who attended for screening is the same irrespective of publicity generated by the advertising campaign

H1 The effect of the publicity on screening attendance is age related

Statistical Test

Chi Square for 2 independant samples with Yates correction for continuity

Significance level P= <0.05

Decision

Chi square	DF	P	H0
0.2738	1	> 0.05	Accept

Table 6.2: ADVERTISING STUDY; INTERVIEW RESULTS
Knowledge of Cervical Cancer; Pre– & Post– Advertising

Responses	ADVERTISING Before		After		Totals	Chi Square Goodness of Fit
Screening = Attendance	178 29.1%	44.4%	223 32.5%	55.6%	401 30.9%	5.0499 P=<0.05
Screening = Prevention	5 0.8%	35.7%	9 1.3%	64.3%	14 1.1%	1.1429
Screening = Detection	24 3.9%	72.7%	9 1.3%	27.3%	33 2.5%	6.8182 P=<0.01
Specific Definition	20 3.3%	52.6%	18 2.6%	47.4%	38 2.9%	0.1053
Vague Definition	12 2.0%	60.0%	8 1.2%	40.0%	20 1.5%	0.8000
Knowledge of Symptoms	6 1.0%	30.0%	14 2.0%	70.0%	20 1.5%	3.2000
Knowledge of Causes	29 4.7%	43.9%	37 5.4%	56.1%	66 5.1%	0.9697
Knowledge of Treatment	37 6.1%	38.5%	59 8.6%	61.5%	96 7.4%	5.0417 P=<0.05
General Knowledge	68 11.1%	51.9%	63 9.2%	48.1%	131 10.1%	0.1908
Erroneous Knowledge	10 1.6%	62.5%	6 0.9%	37.5%	16 1.2%	1.0000
Fear Mentioned	15 2.5%	44.1%	19 2.8%	55.9%	34 2.6%	0.4706
Age Related	10 1.6%	38.5%	16 2.3%	61.5%	26 2.0%	1.3846
Known Someone with CIN	32 5.2%	58.2%	23 3.4%	41.8%	55 4.2%	1.4727
Had CIN	9 1.5%	60.0%	6 0.9%	40.0%	15 1.2%	0.6000
None	156 25.5%	47.0%	176 25.7%	53.0%	332 25.6%	1.2048
Totals	611	47.1%	686	52.9%	1297	

Hypotheses

H0 The proportion of replies classified to the response categories does not vary between pre–and post–advertising

H1 The responses obtained are related to the advertising campaign

Statistical Test

Chi Square for 2 independant samples with Yates correction for continuity

Significance level P=<0.05

Decision

Chi square	DF	P	H0 ?
23.2	14	> 0.05	Accept

In order to determine if any individual responses varied across the 2 groups, all responses were subjected to the following additional analysis:

Hypotheses

H0 The expected number of responses does not vary between pre– and post–advertising

H1 The number of responses obtained is related to the advertising campaign

Statistical Test

Chi Square goodness of fit

Significance level P=<0.05

Decision

See right hand column of table

Table 6.3: ADVERTISING STUDY – INTERVIEW RESULTS
Location of Nearest Screening Clinic; Pre– & Post– Advertising

Response	Advertising				Totals
	Before		After		
Known	293	43.1%	387	56.9%	680
	60.9%		74.3%		67.9%
Not Known	128	56.6%	98	43.4%	226
	26.6%		18.8%		22.6%
No Need to Know	60	62.5%	36	37.5%	96
	12.5%		6.9%		9.6%
Totals	481	48.0%	521	52.0%	1002

Hypotheses

H0 The proportion of women classified to the the 3 alternative response categories is the same irrespective of publicity generated by the advertising campaign

H1 The responses obtained are related to the advertising campaign

Statistical Test

Chi square with significance level P= <0.05

Decision

Chi square	DF	P	H0
21.41	2	<0.001	Reject

Table 6.4.1: ADVERTISING STUDY; INTERVIEW RESULTS
Summary of Interview Findings Across Screening History, Housing Tenure & Social Class

See text for explanation of X & XX

Subject	Response	Screening History				Housing Tenure		Social Class				
		RA	LA	NA	Hys.	LAT	NLAT	1/2	3NM	3M	4/5	Unem.
RISK CATEGORY	High risk wards		x	x		x					x	x
	Low risk wards	x					x	x				
MARITAL STATUS	Single		x	x				x				
	Married	x					x			x	x	
	Separated/divorced		x	x		x			x			
	Widowed		x	x		x						x
AGE	<50 years	x					x	x				
	50–59 years		x			x						
	60+ years			x		x						x
ACADEMIC ATTAINMENTS	Left school <15 yrs		x	x		x						x
	Left school >15 yrs	x					x	x				
	Additional studying	x					x	x				
SOCIAL CLASS (OWN)	Skilled (1 to 3NM)	x					x					
	Unskilled (4 & 5)				x	x						
	Unemployed		x	x		xx						
SOCIAL CLASS (HUSBAND)	Skilled (1 & 2)	x					x					
	Unskilled (4 & 5)					x						
	Not working		x	x	x	x						
TENURE	Council (LAT)		x	x	x						x	x
	Private (NLAT)	x						x				
PARITY	No children			x			x	x				
	1 child					x			x			
	2 children	x					x			x		
	3 children					x					x	
	3+ children											x
SCREENING HISTORY	Regular Attender (RA)						x	x	x			
	Lapsed attender (LA)					x						x
	Never attender (NA)					x						x
	Hysterectomy (Hys)					x					x	
	1–2 yrs between smears	x					x	x	x			
	> 5 years between smears		x			x						x
	One smear only		x			x						x
	2 smears										x	
	> 3 smears	x					x	x	x			
GP STATUS	Access to female GP – Yes	x										x
	– No		x	x							xx	
	Prefer female GP	x										
	GP seen < yearly	x				x						x
	GP seen > yearly		x	x			x	x				
	Yrs with GP 1–5			x				x				
	Yrs with GP 6–15	x								x		
	Yrs with GP >20		x									x
FIRST HEARD OF SMEARS	Family Planning/Well Womar	x					x	x	x	x		
	Advertising		x									
	Pregnancy		x								x	
	Symptomatic		x			x						x
FIRST SCREENING	Family Planning	x					x			x		
	Well Woman	x				x				x		
	Gynae OPD		x									
	GPs surgery						x					x

Table 6.4.2: ADVERTISING STUDY; INTERVIEW RESULTS
Summary of Interview Findings Across Screening History, Housing Tenure & Social Class

See text for explanation of X

Subject	Response	Screening History				Housing Tenure		Social Class				
		RA	LA	NA	Hys.	LAT	NLAT	1/2	3NM	3M	4/5	Unem.
KNOWLEDGE OF CYTOLOGY	No knowledge		x	x		x				x	x	x
	Correct knowledge	x					x	x	x			
	Incorrect					x						
	"Heard about it"					x						
KNOWLEDGE OF TERMS	Cervix: Correct	x					x	x	x			
	Euphemistic					x				x	x	x
	Incorrect					x				x	x	x
	Unknown			x								
	Neck of Womb: Correct	x	x				x	x	x			
	Euphemistic					x				x	x	x
	Incorrect					x				x	x	x
	Unknown			x								
PURPOSE OF CYTOLOGY	Smears find pre-cancer	x					x	x				
	Smears detect ca cervix		x			x				x		
	Unknown			x		x						x
YEARS BETWEEN SCREENINGS	Depends....							x	x			
	Less than 1 year	x								x	x	
	1 year											
	3 years							x	x			
	5 years											x
	Unknown		x	x								x
	5 years is too long	x						x	x			
PREVENT DISEASE?	Ca cx is preventable	x					x	x	x			
	Ca cx is not preventable			x		x				x	x	x
CURE DISEASE?	Ca cx is curable	x					x	x	x			
	Ca cx is not curable			x		x				x	x	x
	Don't know			x								
ATTITUDE TOWARDS CYTOLOGY	Embarrassing					x						
	Frightening					x						
	Uncomfortable						x					
PERSUADE FRIENDS TO SEEK SCREENING	Fear as Incentive									x	x	
	Peer pressure	x										
	Common sense	x				x		x	x	x		
	Information	x					x	x	x			
	Curable						x					
	Fear as deterrent		x									
	Symptoms		x	x		x						x
	Don't know			x		x						x
	Nothing			x		x						x
PERSUADE SELF TO SEEK SCREENING	Information	x					x	x	x			
	Fear as incentive	x										
	Symptoms		x	x		x						x
	Nothing			x		x						x
	Fear as deterrent			x		x						
SCREENING VENUE	Clinic		x									x
	GPs surgery			x							x	
	Don't mind	x						x				
NEAREST CLINIC	Known (see note)	x				xAS	xBS					
	Not Known		x	x								

Note: "BS" and "AS" represent "Before Sample" and "After Sample" respectively

Table 6.5: ADVERTISING STUDY; INTERVIEW RESULTS
Preventability of Cervical Cancer; Pre– and Post– Advertising

Responses	ADVERTISING Before		After		Totals	Chi Square Goodness of Fit
Not Preventable	85 15.3%	51.2%	81 13.9%	48.8%	166 14.6%	0.0964
Don't Know	162 29.2%	50.5%	159 27.4%	49.5%	321 28.3%	0.0280
Unspecified "Yes"	37 6.7%	39.4%	57 9.8%	60.6%	94 8.3%	4.2563 P=<0.05
Sex Related	69 12.5%	41.1%	99 17.0%	58.9%	168 14.8%	5.3571 P=<0.05
Good Hygiene	29 5.2%	50.9%	28 4.8%	49.1%	57 5.0%	0.0175
Not Smoking	10 1.8%	76.9%	3 0.5%	23.1%	13 1.1%	3.7692
Early Detection	136 24.5%	50.9%	131 22.5%	49.1%	267 23.5%	0.0936
Use of Barrier Contraception	9 1.6%	40.9%	13 2.2%	59.1%	22 1.9%	0.7273
Incorrect– Sex Related	13 2.3%	68.4%	6 1.0%	31.6%	19 1.7%	2.5789
Incorrect– Diet Related	4 0.7%	50.0%	4 0.7%	50.0%	8 0.7%	0.0000
Totals	554	48.8%	581	51.2%	1135	

Hypotheses

H0 The proportion of replies classified to the response categories does not vary between pre–and post–advertising

H1 The responses obtained are related to the advertising campaign

Statistical Test

Chi Square for 2 independant samples with Yates correction for continuity

Significance level P=<0.05

Decision

Chi square	DF	P	H0 ?
16.3	9	> 0.05	Accept

In order to determine if any individual responses varied across the 2 groups, all responses were subjected to the following additional analysis:

Hypotheses

H0 The expected number of responses does not vary between pre– and post–advertising

H1 The number of responses obtained is related to the advertising campaign

Statistical Test

Chi Square goodness of fit

Significance level P=<0.05

Decision

See right hand column of table

Table 6.6: ADVERTISING STUDY; INTERVIEW RESULTS
Curability of Cervical Cancer; Pre – and Post – Advertising

Responses	ADVERTISING Before		After		Totals	Chi Square Goodness of Fit
Not Curable	24	41.4%	34	58.6%	58	1.7241
	4.7%		6.1%		5.4%	
Don't Know	87	51.2%	83	48.8%	170	0.0941
	17.1%		14.8%		15.9%	
Sometimes	26	41.3%	37	58.7%	63	1.9206
	5.1%		6.6%		5.9%	
If Caught Early	197	48.5%	209	51.5%	406	0.3547
	38.6%		37.3%		37.9%	
Unspecified "Yes"	120	49.0%	125	51.0%	245	0.1020
	23.5%		22.3%		22.9%	
Known Someone Cured	10	37.0%	17	63.0%	27	1.8148
	2.0%		3.0%		2.5%	
Easiest Cancer To Cure	36	46.8%	41	53.2%	77	0.3247
	7.1%		7.3%		7.2%	
Experts Say So	10	40.0%	15	60.0%	25	1.0000
	2.0%		2.7%		2.3%	
Totals	510	47.6%	561	52.4%	1071	

Hypotheses

H0 The proportion of replies classified to the response categories does not vary between pre – and post – advertising

H1 The responses obtained are related to the advertising campaign

Statistical Test

Chi Square for 2 independant samples with Yates correction for continuity

Significance level P = < 0.05

Decision

Chi squa	DF	P	H0 ?
4.92	10	> 0.05	Accept

In order to determine if any individual responses varied across the 2 groups, all responses were subjected to the following additional analysis:

Hypotheses

H0 The expected number of responses does not vary between pre – and post – advertising

H1 The number of responses obtained is related to the advertising campaign

Statistical Test

Chi Square goodness of fit

Significance level P = < 0.05

Decision

See right hand column of table

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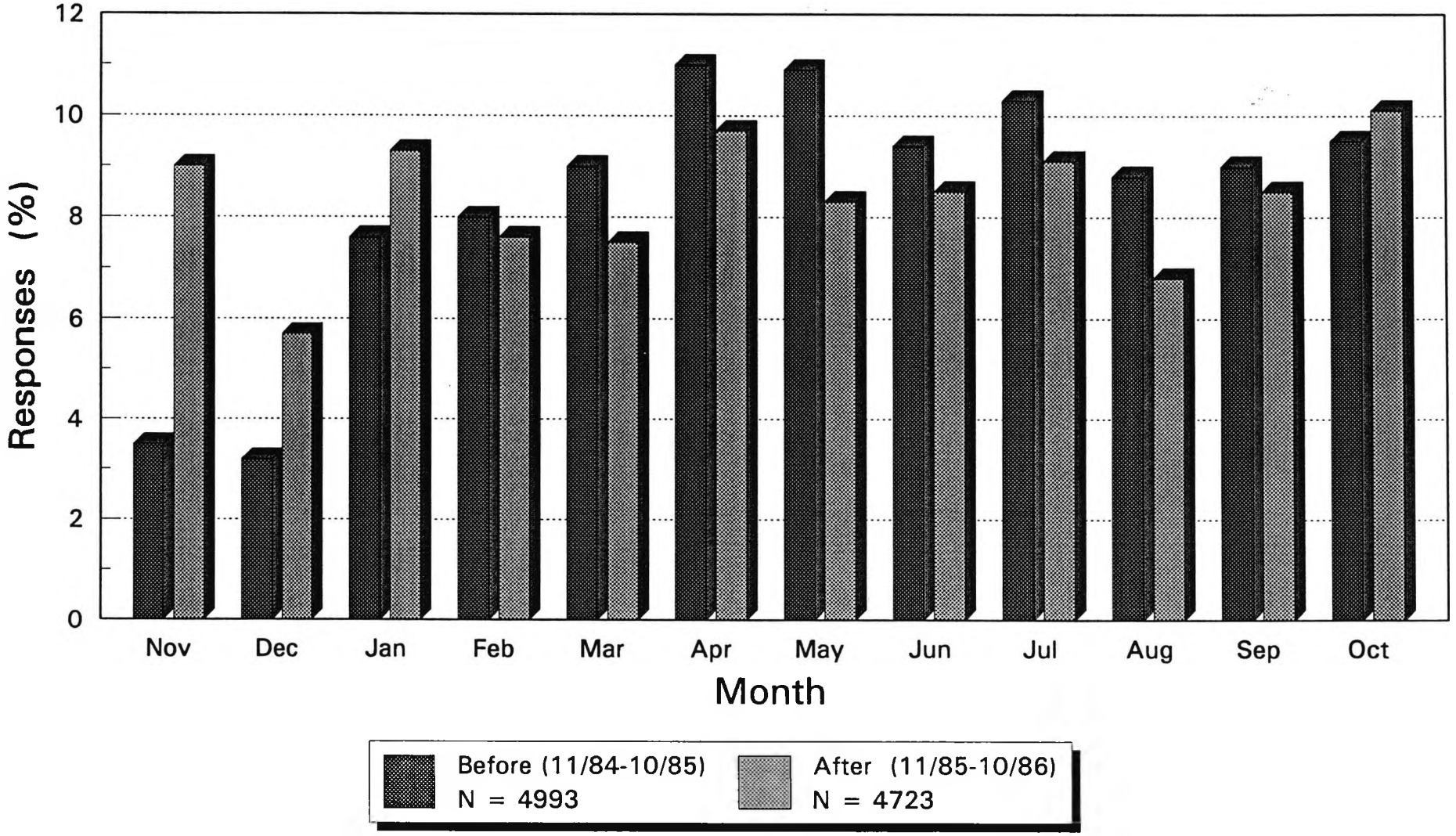

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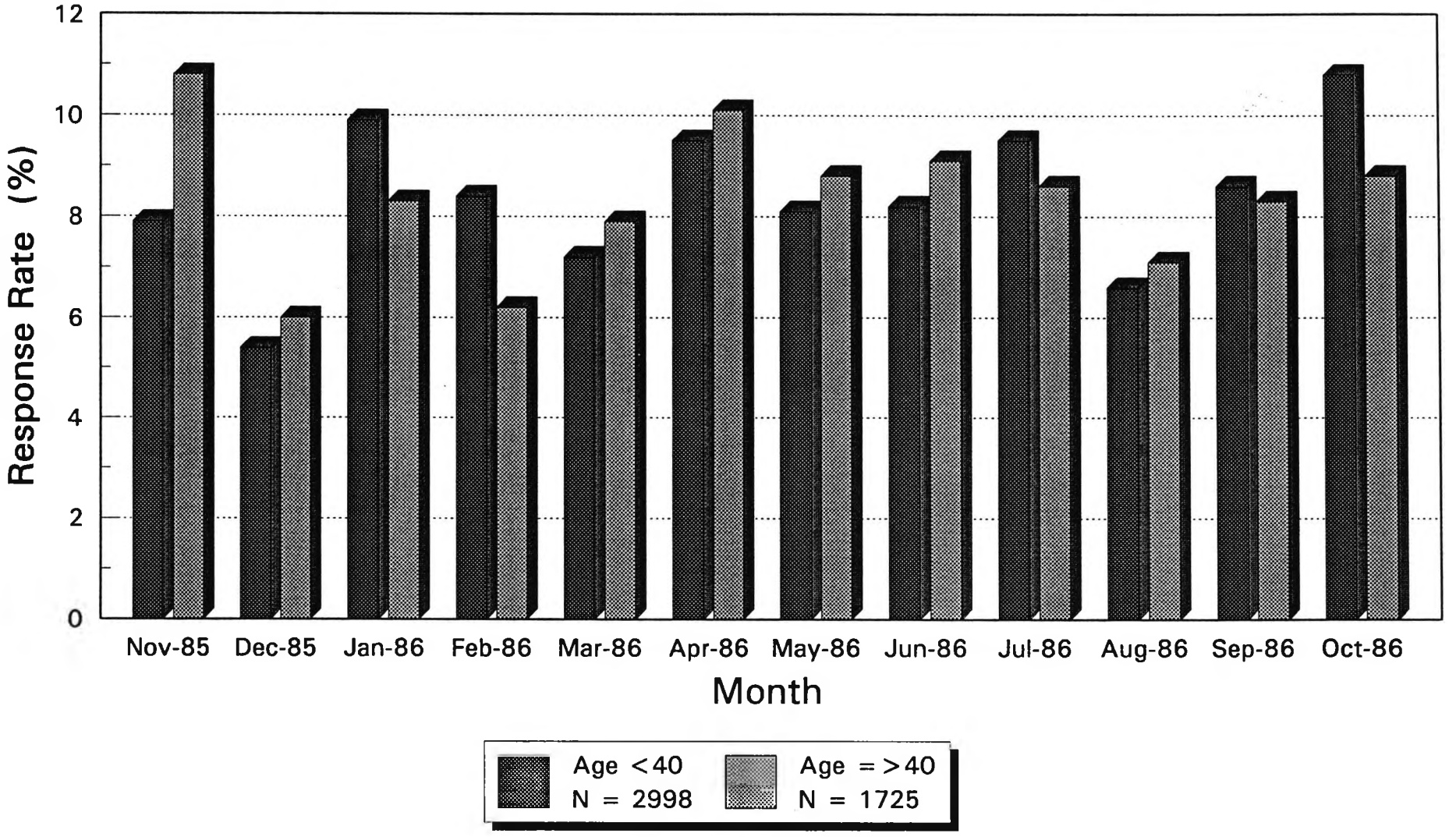

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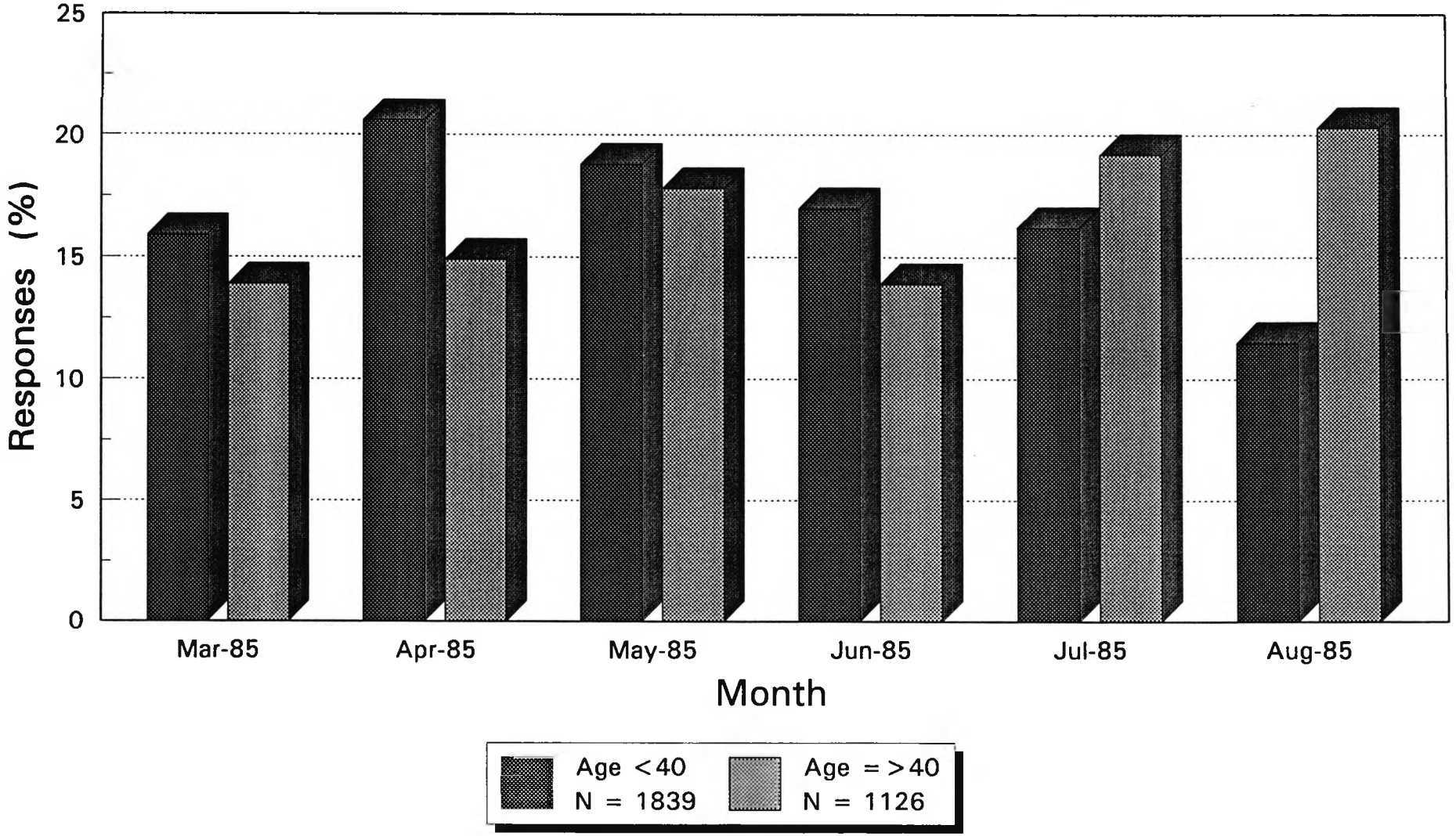

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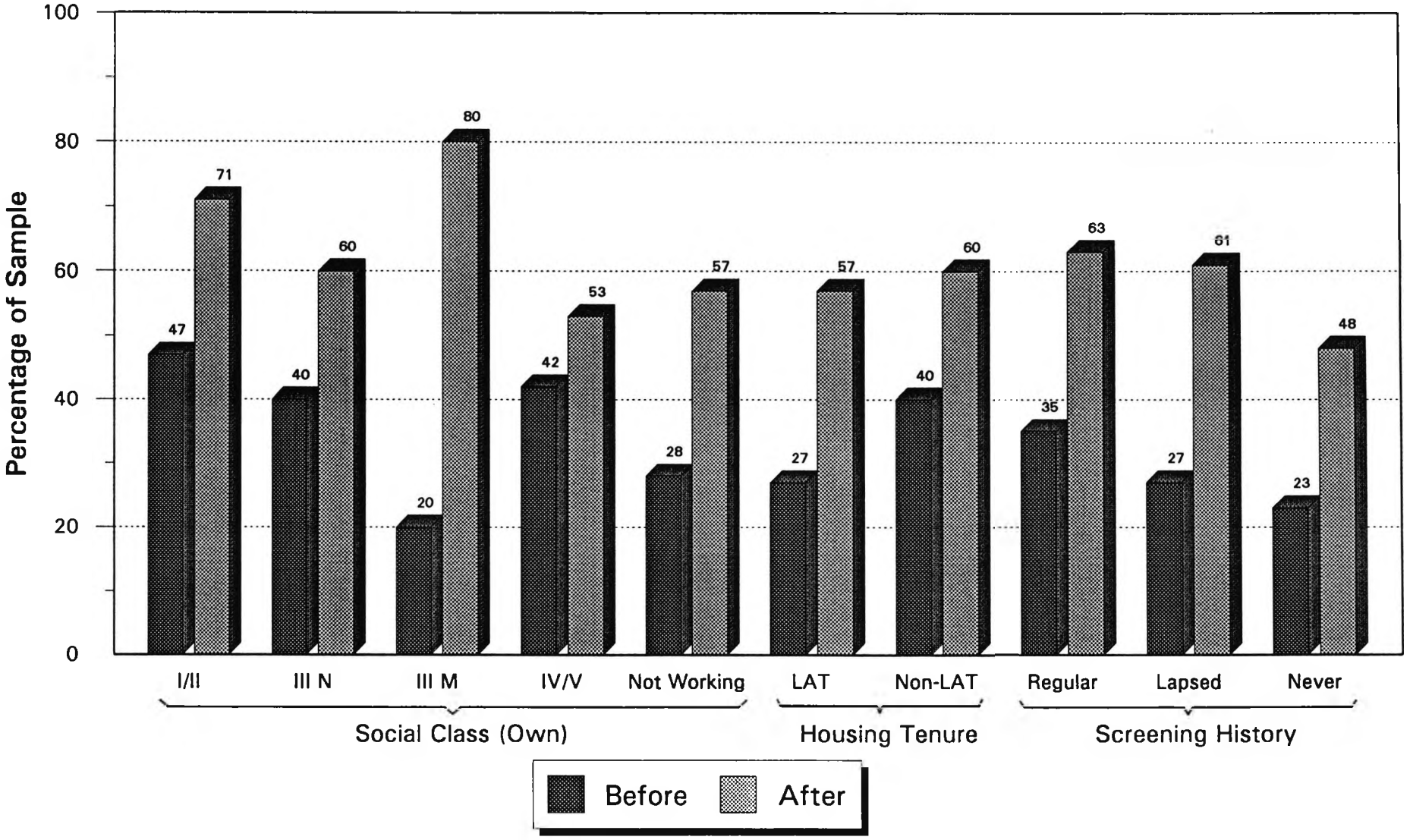

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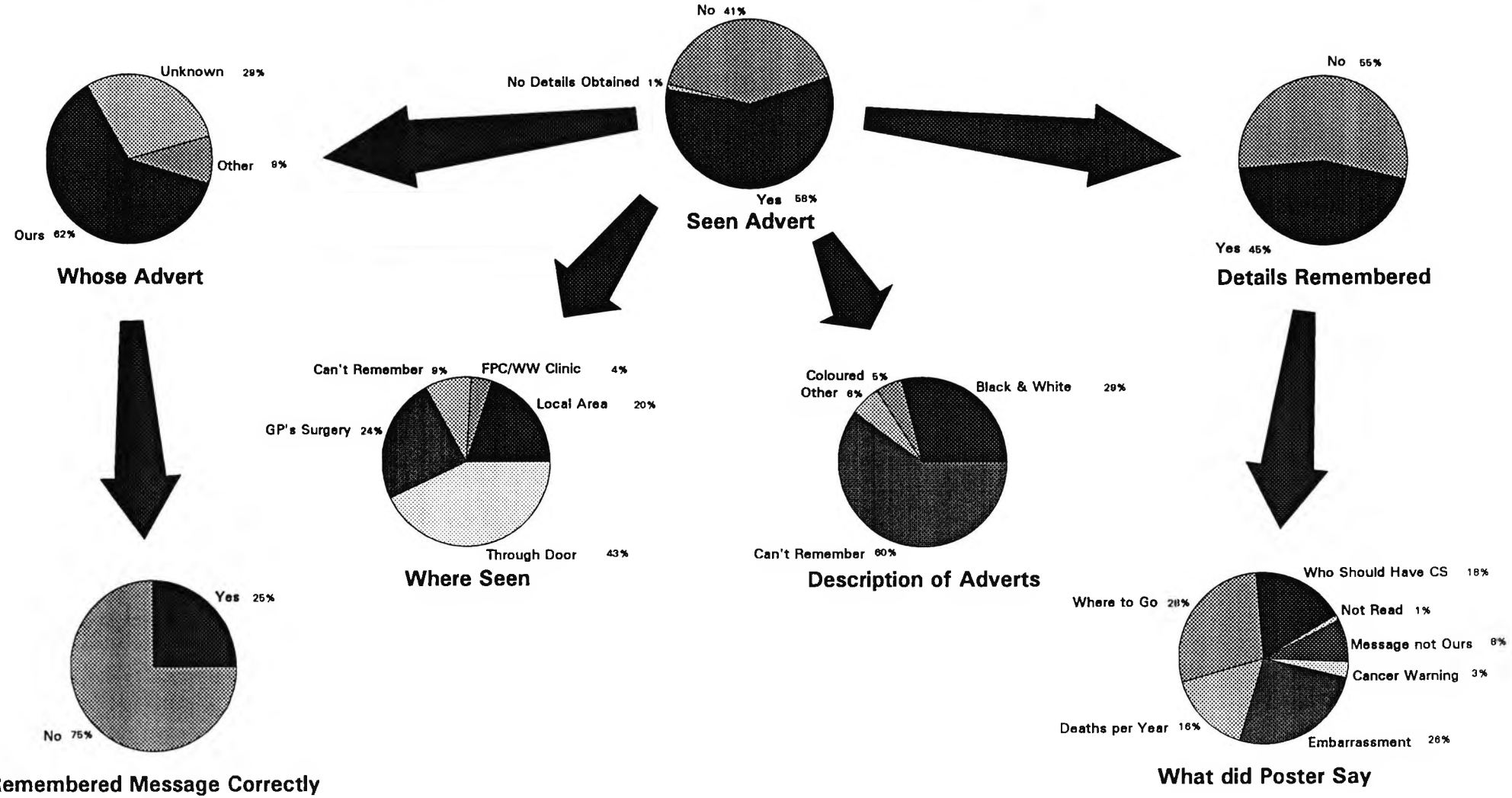

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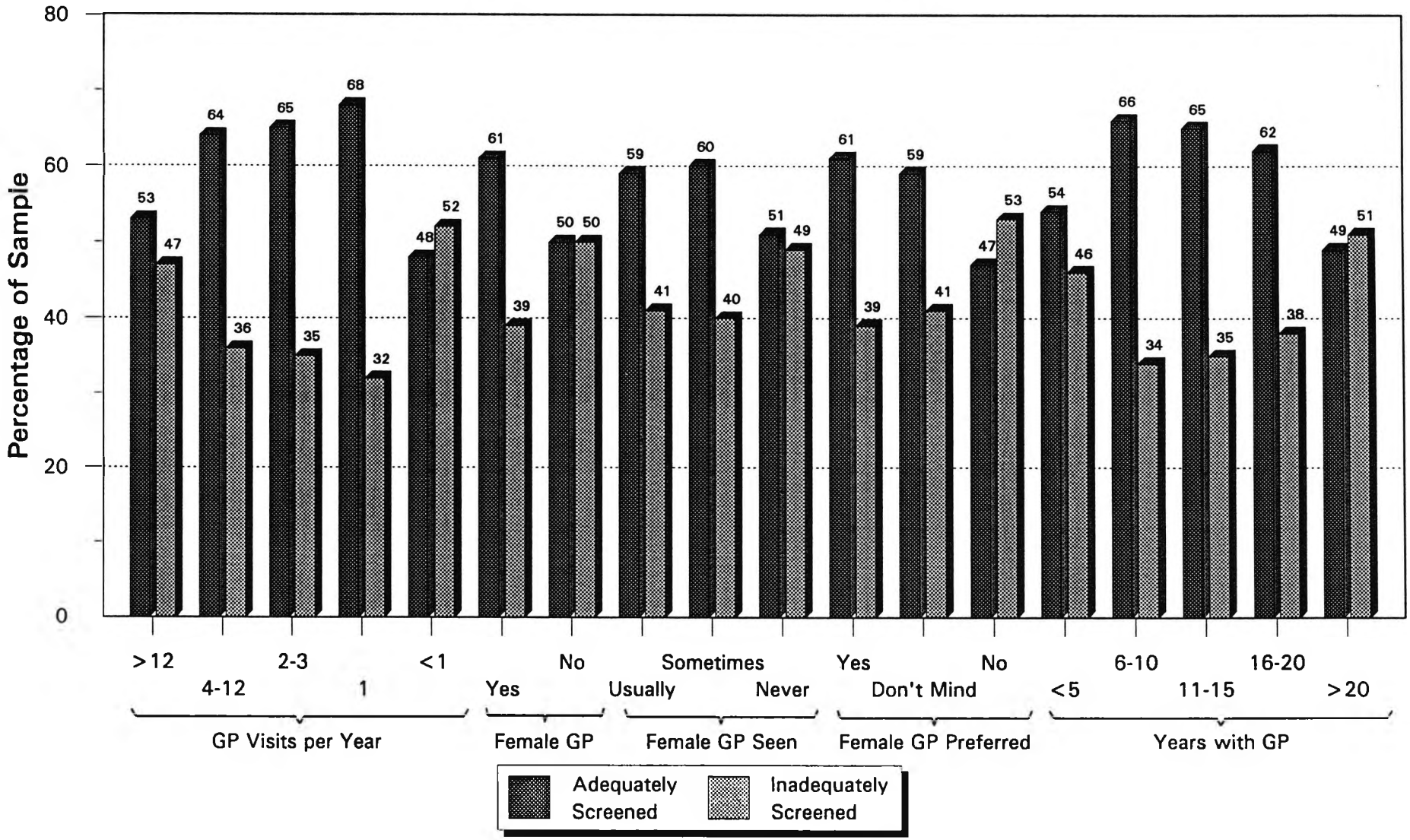

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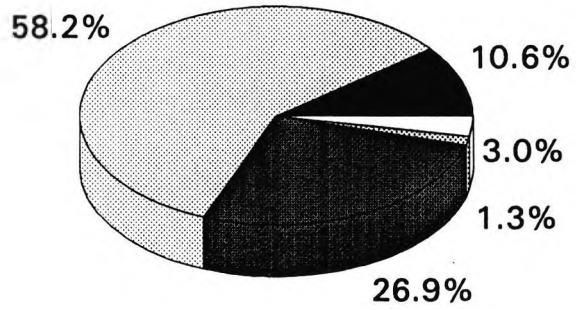
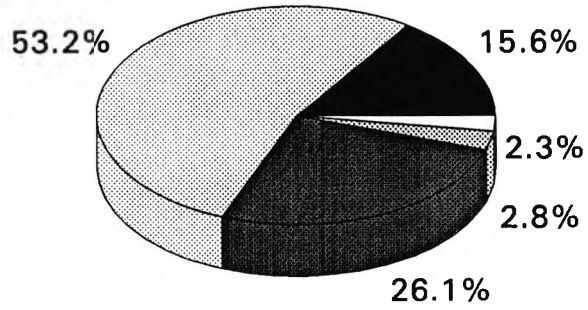


Neck of Womb
N = 949



Cervix
N = 963

Don't Know | Correct | Euphemistic | Incorrect | Unspecified

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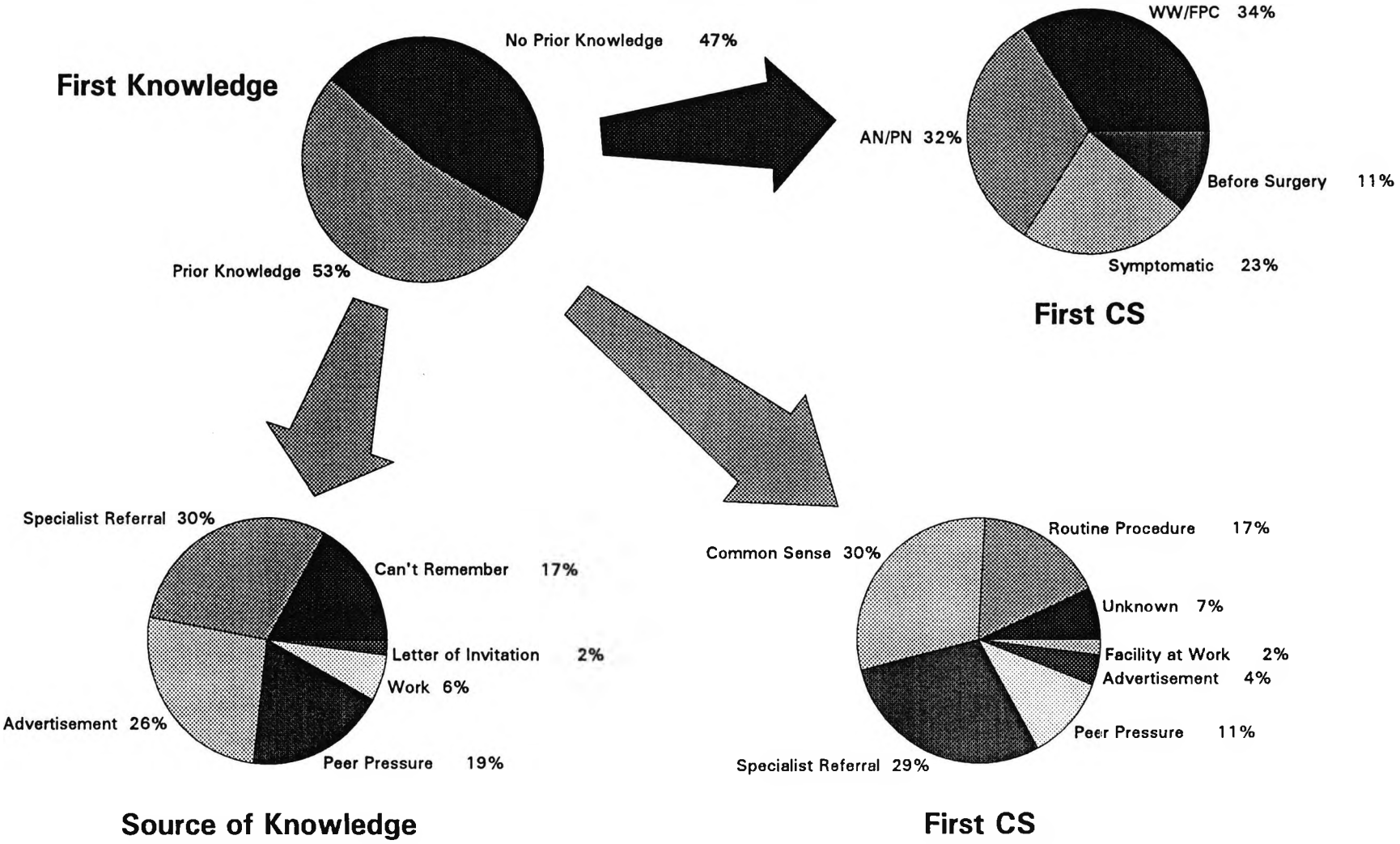

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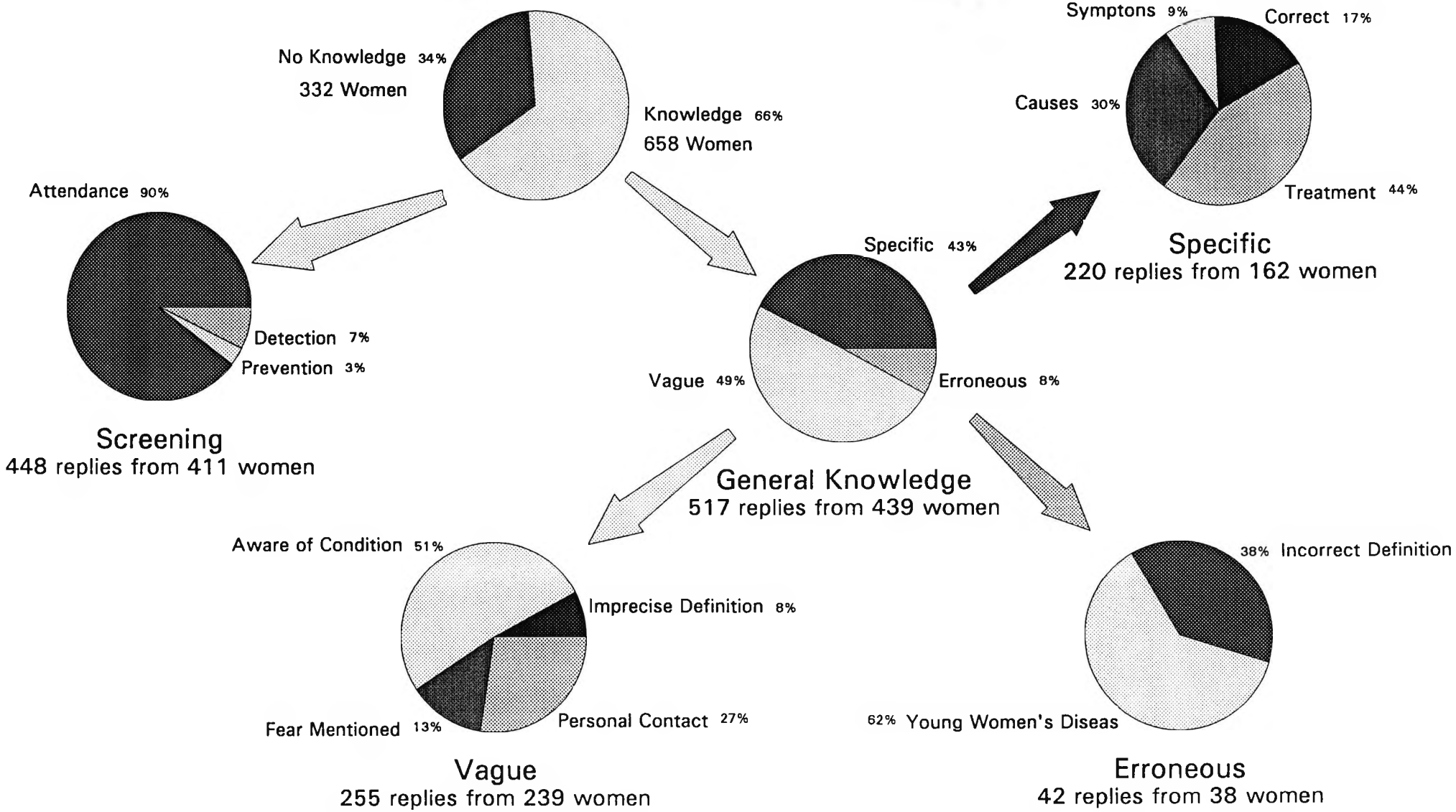

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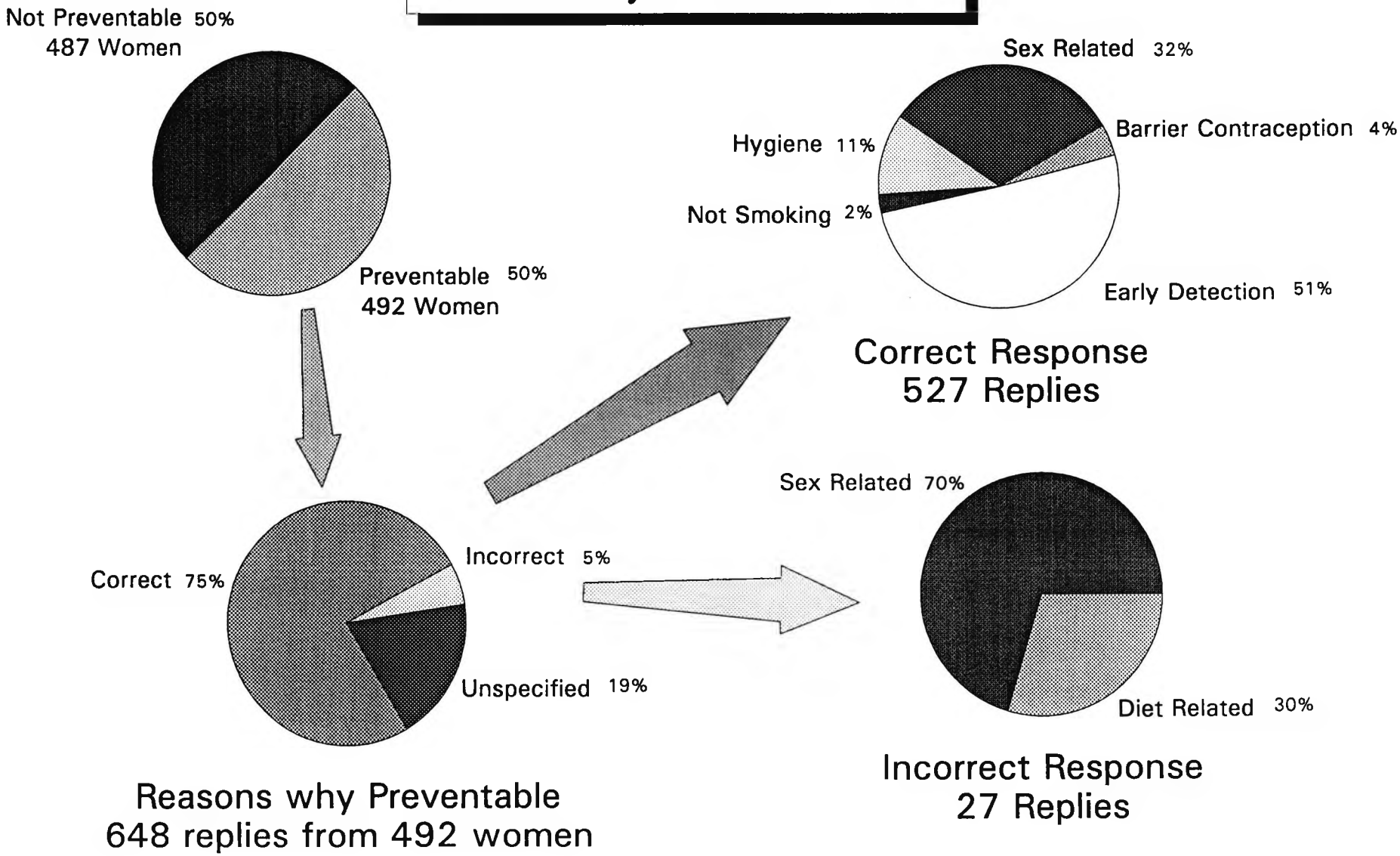

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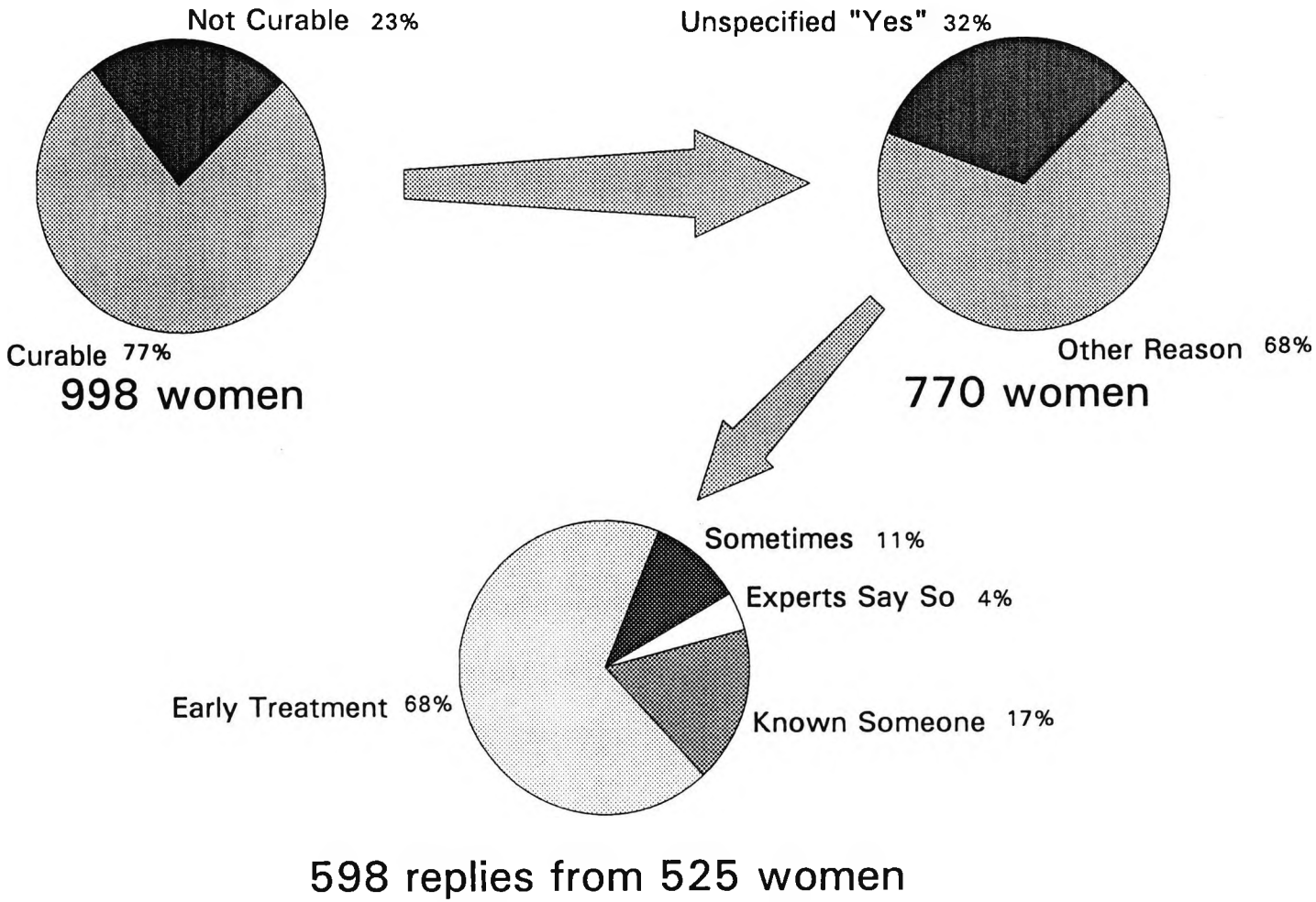

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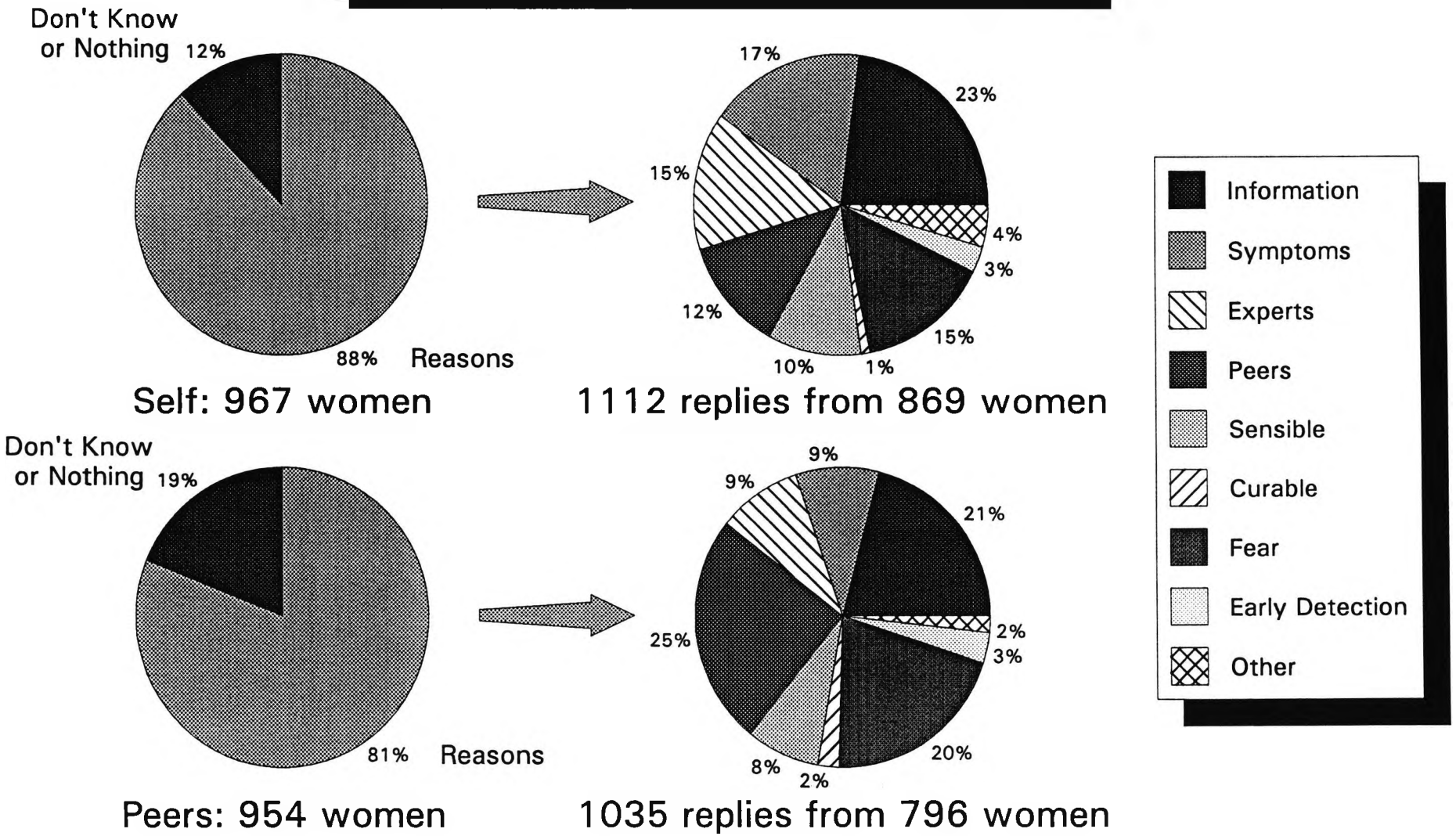

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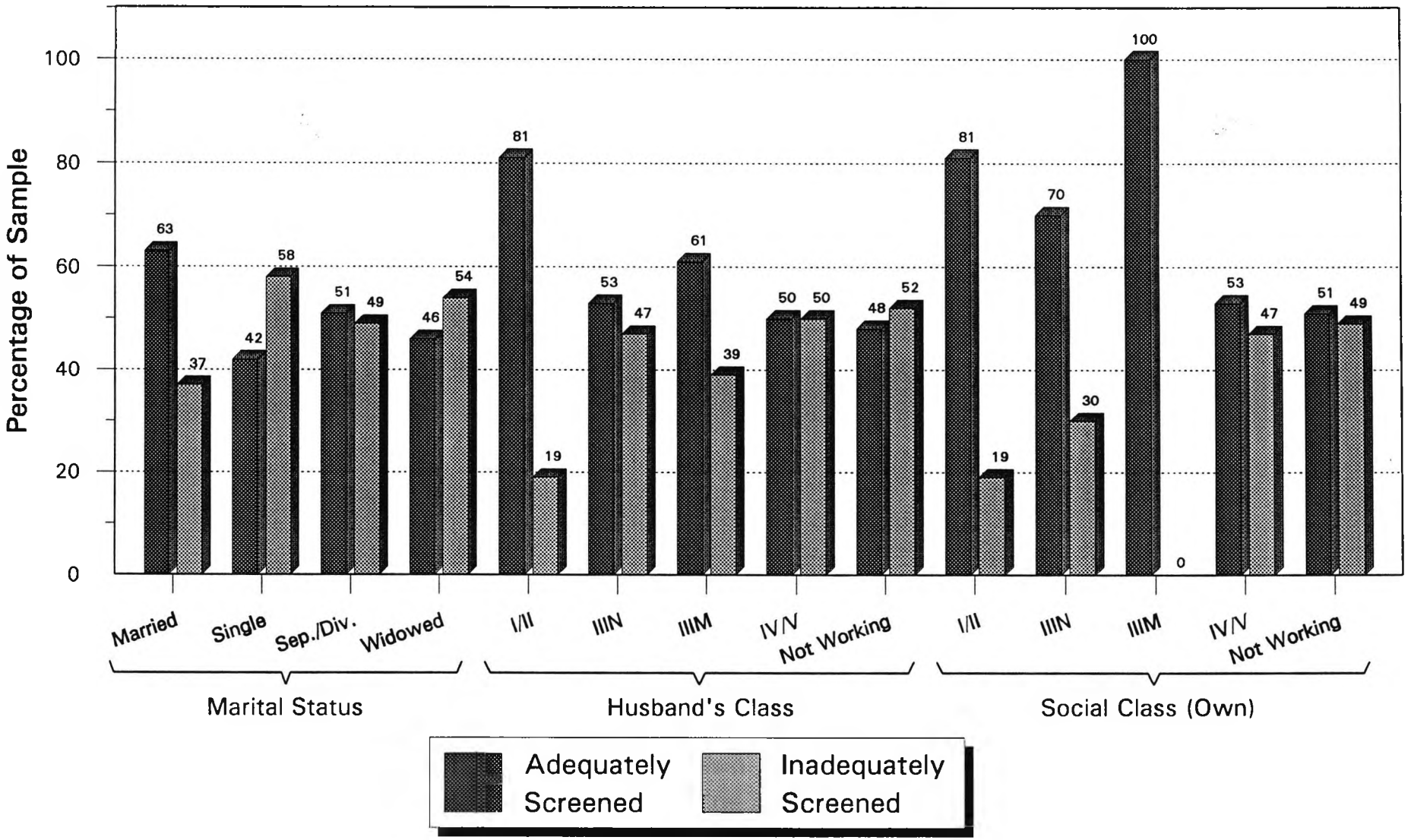

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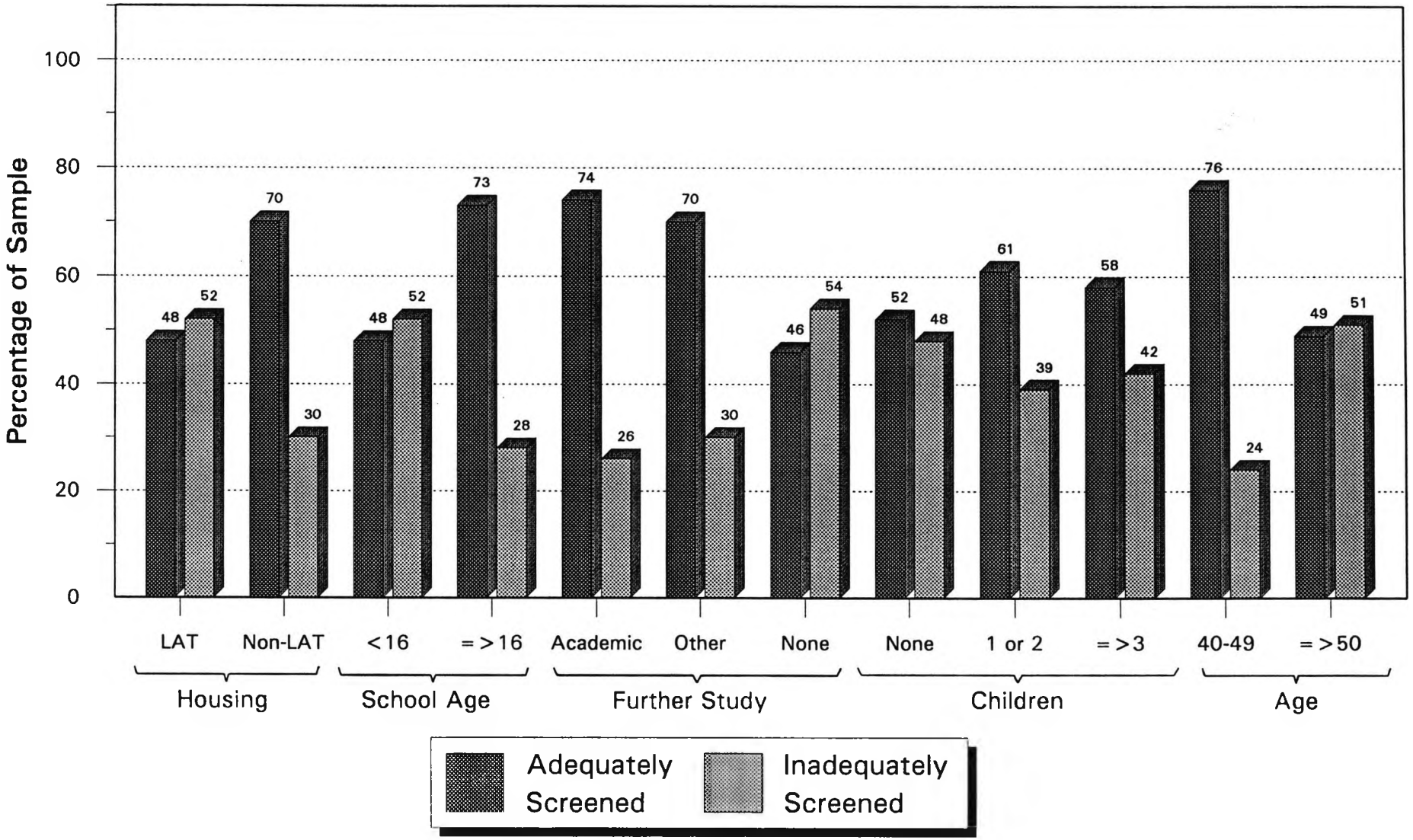
Screening History by Risk Factors



CHAPTER 7
SCREENING WITHIN INDUSTRY

7.1 Summary

Within West Surrey & North East Hampshire Health District, a mobile screening unit was used to make screening easily available to women at work. All companies employing at least 25 women were offered the service; 39 out of 82 companies accepted.

Among those companies which were able to supply a register of their employees aged 40 or over, 91% of eligible women attended the mobile clinic. The clinic doctors followed District guide-lines in not taking smears from women who had been screened and found negative within the previous five years. Of the 1038 women who attended the clinic, cervical smears were taken from 568 (55%). 15 women were found to have cervical neoplasia, of whom nine had either never been screened before or had last been screened more than five years previously; a further two women (one of whom was found to have early invasive cancer) had previously had an abnormal smear for which the recommended follow-up had not been done.

It was not possible to quantify the benefits of other tests (clinical breast examination, blood pressure, urinalysis and gynæcological examination) included in the screening clinic, but they were popular with the women attending.

Provided the health authority is involved in the planning and organisation of workplace screening, it can be a valuable adjunct to improve screening coverage, particularly for women aged over 40.

7.2 Method

WSNEH Health District is an area of expanding population with a lot of light industry. Details of all industries in the District which employed women were obtained through the Health and Safety Executive, various trade bodies and directories. 82 companies which employed at least 25 women were identified. Each company was contacted and asked if they would permit screening of their employees during the working day. 39 (48%) companies agreed, 33 refused and 14 did not reply to three letters of request. One of the companies which agreed only did so after pressure from its workforce who had seen the mobile caravan in operation.

The Personnel Officer or equivalent person in each participating company was contacted, details of the exact number of women employed were ascertained and dates for the mobile clinic to visit were arranged. In all cases, it was stipulated that screening was primarily provided for women aged 40 or over, who had not been screened during the preceding five years, although if there was sufficient time younger women could be screened if they had never been screened before or if they had symptoms. Two weeks before the arrival of the clinic, posters and leaflets emphasising the need for cervical cytology and giving dates and details of screening were displayed in all areas frequented by women employees. In addition, in half of the companies, an informal talk was given to the entire female workforce to explain the service and answer questions.

The mobile caravan was provided by the Women's National Cancer Control Campaign. It measured twenty-two feet in length and comprised of a reception area, two cubicles for changing, a toilet, waiting area and fully equipped examination room. It was staffed by a receptionist, a nurse and a doctor and was moved from workplace to workplace staying sufficiently long at each location to screen participants from the industry concerned.

The DHA had requested that a total Well-Woman clinic be provided so women who attended were not only screened for cervical cancer but also had a clinical breast examination, blood pressure check and urinalysis. It also requested that its Family Planning forms should be used so the women screened could be entered into the District's records at the end of the project. These forms included details about previous cervical screening, parity, age at first coitus and other risk factors implicated in cervical cancer.

It was originally planned to run between three and four sessions per week but, due to greater than anticipated demand and a delay of three months in starting the project, an average of nine sessions per week proved necessary.

The workplace screening was due to start in July 1985 but was delayed to allow the District cytopathology laboratory to catch up on its backlog of work resulting from the 'Oxford incident'. The screening finally commenced in September 1985 and continued until the end of November. Due to adverse weather conditions, the caravan could not be used during the three winter months, but the service was started again in March 1986 and continued until the end of May. During the first three months (the 1985 sample), the composition of the screening team in the caravan remained constant with the same doctor, nurse (the author) and receptionist working together; in the second three months (the 1986 sample) there were many staff changes.

During the 1985 sessions, any woman aged 40 or over and on the company's register who did not attend the mobile caravan was interviewed by the author to determine reasons for non-compliance. For the 1986 sample, a questionnaire was sent to each of the non-attenders.

All details regarding previous attendance for cervical cytology were cross-checked with the relevant cytopathology laboratories which supply West Surrey & North East Hampshire and surrounding Health Districts.

7.3 Results

7.3.1 General

In all, 85 clinic sessions were held and 1038 women attended, of whom 869 (84%) were aged 40 or over. The ages ranged from 17 to 65 years with the average across the total sample being 45.8 years. For the target age range alone, the mean age was 48.7 years (standard deviation 5.7 years).

Each woman was allocated 20 minutes with the doctor and, in a session lasting three and one half hours, approximately 10 women were seen.

7.3.2 Response Rates

The number of women aged over 40 in the workforce was known for only 21 of the 39 companies. Together they employed a total of 613 women in the target age range, but 125 of these were found to be ineligible for screening. 15 (12%) had undergone hysterectomy involving removal of the cervix for a condition unrelated to cervical cancer, and 77 (62%) were regularly screened elsewhere. Nine women in this latter group wished to attend the clinic for the other services provided but could not be seen due to excessive demand. However, appointments were made for them to visit local Well-Women clinics and all attended these.

33 women were 'unavailable' at the time of the clinic visit. 25 of these were either on holiday or on sick leave. The remaining eight women were menstruating during the screening sessions but, once again, all subsequently attended for appointments made elsewhere.

Thus, only 488 of the 613 women were present and eligible for screening during the visit of the mobile caravan. Of these, 447 women attended giving an overall response

rate of 91.6%. Although the attendance was higher in the 1985 sample, 96% compared to 80% during the second half of the project, this difference did not attain significance.

41 women present at work during the time that screening was available did not seek the services offered. 7 (1.4% of the eligible women) refused to attend although they had never been screened for cervical cancer. It was impossible to discover why a further 24 (4.9%) women did not attend for screening as they either refused to be interviewed and/or did not return the questionnaire that was sent to their home address.

The remaining 10 (2%) women had not been informed about the clinic due to failure of communication within the company. All expressed a desire to attend the clinic, and eight were found not to have been screened for an interval greater than five years. Once again, appointments were made for them to visit local well women clinics and all attended these.

This problem of not knowing about the clinic was more acute in the second half of the program where it accounted for one third of the women who did not attend for screening. Further scrutiny showed that lack of communication was most prevalent in the six hospitals visited!

508 (83%) of the 613 women attended the informal talks about screening given prior to the arrival of the mobile caravan. While it is possible that these discussions helped raise levels of awareness about cervical cancer and the need for screening, they had no effect on attendance.

7.3.3 Demographic Characteristics of Attenders

Due to the close proximity of North West Surrey and WSNEH in the industrial areas, some degree of overlap was anticipated with regards to the Health Districts from which the women were drawn. Overall, 92% * of the women who attended the mobile caravan were WSNEH residents, while 4% lived in North West Surrey and a further 4% were domiciled further afield ** . Of the 93 women who lived outside

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** Of these 11 women refused to give their exact address & 1 was of no fixed abode although she generally resided within the Camberley (WSNEH Health District) vicinity.*

*** For these 40 women housing lists had not been obtained & it was judged not to be worthwhile contacting four additional authorities to obtain the requisite information for such a small sample.*

of WSNEH, 64 (69%) were under the age of 40 years. With regard to marital status the distribution of clinic attenders resident in WSNEH reflects that of the District as a whole in the 1981 Census (Figure 7.1).

7.3.3.1 Social Class

Each woman attending the mobile clinic was asked to describe both her own occupation and that of her spouse (if applicable). Verification for the women's occupations was determined by checking the details with the company representative. These were then classified according to the 1980 edition of the 'Registrar General's Classification of Occupation'. The social class of the husband was determined entirely by the woman's description.

When classified by their own occupations, the largest single grouping among the women screened on the mobile caravan was Social Class IIIN (42%) followed by Social Class IV (21%) and Social Class II (21%). Less than 1% of the occupations fell in Social Class I and only 4% in Social Class V.

It was possible to classify the jobs of 672 spouses and by directly comparing the occupations of both husband and wife, it transpired that while marriage tended to occur between individuals of similar status, overall the women held lower status occupations than their husbands ($P = <0.0001$ - Table 7.1). In general, the men were more likely to be classified to Classes I, II and IIIM while the women were predominantly in IIIN, IV and V.

A comparison of occupation using the 1981 Census data (Figure 7.1) revealed that the women resident in WSNEH who attended for screening were more likely to hold manual occupations than men within the Health District (Chi Square = 5.12, 2df, $P = 0.001$). However, this finding is little more than a reflection of the jobs undertaken by middle aged women, as well as the types of work performed by the participating companies.

7.3.3.2 Housing Tenure

Across all the women who attended the mobile clinic, 10% were resident in council housing while 83% were owner occupied/rented privately. 1% were living in accomodation provided with the job (eg nurses homes) and the remainder were unclassifiable. For the 840 women aged over 40 years who were resident in WSNEH, the figures were 11% - council residents; 86% - private sector; 2% - job accomodation,

and 1% no data obtained. This information is shown in Figure 7.1 where it can be seen that more women resident in the private sector visited the mobile caravan than are reflected in a comparable population drawn from the 1981 Census Data.

Among the women of the target age range, those aged 55-64 years were the most likely to be resident in council housing (Chi Square = 21.8, 4df, P = <0.001 - Figure 7.2). Housing tenure was also related to marital status with there being more 'un-married' women (i.e. separated and divorced as well as single) resident in council housing (Chi Square = 18.97, 3df, P = <0.001).

Across all age groups, Social Classes IIIM, IV and V were more likely to be resident in local authority tenure housing. This applied both when the women were classified by their own occupation (Chi Square = 44.69, 3df, P = <0.001) and by that of their spouse (Chi Square = 13.35, 3df, P = 0.001).

7.3.3.3 Derivation of Screening Histories

The women were classified according to the criteria outlined in Section 3.

993 women who attended the mobile caravan were able to give verbal details of their previous cytology history. This information was then crosschecked with the two cytopathology laboratories which supplied North West Surrey and WSNEH Health Districts. No information had been forthcoming from a further 37 women and the laboratory records that were found for this group were felt to be insufficient for accurate classification and these women were excluded from the subsequent analysis. The remaining eight women had undergone hysterectomy and examination of hospital and cytopathology records revealed dates of previous cytology in seven instances.

Thus, it was possible to cross-check the cervical cytology records for 707 women and in 62% the women's recollection tallied with that of the laboratory. In 6% of cases, the women overestimated the interval since her last test and in 4% she underestimated it (Table 7.2).

While the laboratory records were more accurate for the women with intact cervices, they also revealed that 9% of the women who had undergone hysterectomy had (unknown to them) had a cervical smear. This substantiates the view that women who are screened as an adjunct to some other procedure are often unaware of ever having been screened.

In all, 188 women had had a hysterectomy and, since recommendations for screening this group are not standard, they have been examined separately below.

7.3.4 Women with Intact Cervices

7.3.4.1 Screening History

While the number of regular attenders did not differ with age there were significantly more lapsed attenders among the older women and significantly more new recruits and never attenders in those under 40 years of age (Chi Square = 81.79, 4df, P = <0.0001 - Figure 7.3). However, it must be remembered that the method of recruitment of women under 40 actively discouraged adequately screened women from attending. Thus, the attenders in this age-group were not representative of this age-group in the work-force concerned. The 'never attenders' and 'lapsed attenders' together represent inadequately screened women and comprised 36% of the total sample, 32% of those under 40 and 38% of those aged 40 or over. So, more than one third of women attending this workplace screening had not been reached by the conventional screening provision. A more detailed breakdown of the over-40's group is shown in Figure 7.4 and confirms the suspicion that attendance for screening tails off with age with 59% of women over 55 being either 'lapsed' or 'never' attenders compared with 34% of women aged 40-44 years.

No significant differences in previous screening history were found according to marital status, social class or housing tenure.

7.3.4.2 Initial Recruitment for Cervical Cytology

It was possible to determine how 709 of the 731 women who had received at least one smear before visiting the mobile caravan came to enter the system. While the most common means of recruitment was through the Family Planning services, this method was much more frequent among the younger women. Those aged 40 or more, however, were much more likely to present with symptoms or to seek the service for themselves (Chi Square = 30.05, 6df, P = <0.0001 - Figure 7.5).

Among the older women, housing tenure and social class also dictated how the initial smear came to be taken. Women resident in council housing or in Social Classes IIIM to V were more likely to have presented symptomatically or to have been recruited by their GPs (Chi Square = 15.22, 6df, P = <0.02 and Chi Square = 30.1, 4df, P = 0.0364 respectively).

Although initial recruitment for cytology played no part in subsequent attendance for cervical screening, where the first smear was performed decreed how often cytology would be undertaken. Excluding those women who were screened more often as a consequence of cervical abnormality, women who were recruited through

the Family Planning Services were screened every 1-3 years, while GP recruited subjects received cytology every 4-5 years. The group who were screened the least often (six years between smears) where those women who were first screened during pregnancy or prior to surgery (Chi Square = 27.87, 14df, P = <0.01).

Across all the women with intact cervices but, again, excluding those with a history of cervical abnormalities, 63% were screened at intervals of less than three years. However, the younger women were screened significantly more often (every 1-2 years) than those aged 40 or over (five years or more between screenings) (Chi Square = 14.01, 6df, P = 0.0294 - Table 7.3). This difference was maintained even across the women who were regular attenders for cervical smears with 50% of the younger women receiving cytology at least every two years compared with only 30% of the older generation.

It was possible to classify accurately the interval between smears for 120 of the lapsed attenders. Of these, 55% had previously been screened at three yearly intervals and 28% at five yearly intervals.

7.3.5 Women who had had a Hysterectomy

188 (18.1%) women had undergone hysterectomy - all but three of these involved removal of the cervix. The average age at hysterectomy was 39.8 years (range 22 to 55 years). 56% of the women had had their hysterectomy by the age of 40 years. The most common reason for the procedure was menorrhagia (39.1%) followed by fibroids (32%). 5% of the women had had hysterectomy for treatment of CIN.

It was possible to determine the screening history up to the date of hysterectomy for 187 women. Of this number, 92 (49.2%) were regular attenders; 4 (2.1%) were lapsed attenders; 27 (14.4%) had never attended and the remaining 12 (6.4%) were women who had been screened within the five years preceding the operation but at irregular intervals before this.

7.3.6 Examinations Performed

7.3.6.1 Cervical Smears

A total of 491 cervical smears were taken from 850 women who had not had a hysterectomy (58%) and 77 vault smears from the 188 who had had a hysterectomy (41%). Of those who had not had a hysterectomy, smears were taken from 45% of 161 women aged under 40, and 61% of 689 women aged 40 or more. These figures reflect the eligibility for screening in relation to the previous screening history already

described as perceived by the screening doctors. The decision on whether a vault smear should be taken from the women who had had hysterectomy rested with the doctor concerned and there was considerable variability in this between the doctors who staffed the clinics.

7.3.6.2 Breast examination

A total of 1016 women had a clinical examination of the breast and an additional four, who had breast implants, were referred for mammography. 22 women were already under the care of a specialist breast clinic.

7.3.6.3 Other

A total of 1033 women had their blood pressure measured, 964 had their urine analysed for protein, sugar and blood, and 645 (including those who had cervical smears) had a gynæcological examination.

All women were informed by letter of their smear results except where abnormalities were detected where they were visited personally and their GP contacted directly. All the women with other abnormalities were given letters of referral to their GPs.

7.3.7 Yield of abnormalities detected

412 (40%) women were found to have a total of 525 abnormalities.

Of the 568 women who had cervical smears, 64 (11%) showed some abnormality. 14 women were found to have CIN; of these, nine were 'lapsed' or 'never' attenders whose disease would probably not have been diagnosed in the intraepithelial phase had they not attended the workplace screening. The woman with invasive carcinoma and another with CIN 3 had both had an abnormal smear within the previous five years which had not been adequately followed up; both of these women said that they would not have had a further smear taken had it not been for the presence of the mobile clinic at the workplace.

114 women (11% of those examined) were found to have some suspicion of breast abnormality and were referred to their GPs for further investigation. 24 of these women refused further investigation and the results are unknown for a further eleven. Of the remaining 79, none were found to have breast cancer, 42 were found to have benign breast disease and 37 were found to be normal. The number of breast biopsies is not known.

123 women were referred to their GP because of a diastolic blood pressure of 100 mm Hg or more. The outcome of these referrals is not known. 89 women had urinary abnormalities (43 protein; 43 blood; 3 sugar) and 115 had minor gynæcological abnormalities.

7.4 Discussion

This study demonstrates that workplace screening is popular with female employees and reaches a substantial proportion of women who do not attend their GPs or health authority clinics for well-woman screening. Its success, however, depends both upon the method of organisation and upon the enthusiasm and commitment of those providing the service. It seems likely that the higher response obtained in the first half of the study derives from the popularity of the doctor/nurse/receptionist team who came to be recognised as the mobile clinic staff; some of these participated in the preliminary talks to each workforce and provided a continuity in care which was appreciated by the women who subsequently visited the mobile caravan. The talks themselves had no appreciable effect on response. During the second half, several different doctors and nurses were employed on a sessional basis and the team identity was lost. Another important factor is the enthusiasm of the personnel officer or equivalent person within each workforce in encouraging response and ensuring that all employees are aware of the mobile clinic. Regrettably, the District General Hospital turned out to be the least organised in this respect.

Concern is often expressed by health authorities that occupational screening can overload District services, particularly laboratory services, with unnecessary smears taken on women who are already adequately screened and/or who are not district residents. Although, neither of these criticisms is warranted in this case, since, in this particular District, the great majority of employees were District residents and because both the women and the clinic staff were aware that screening was not indicated for women who had been screened within the previous five years, 8% of the women seen were resident outside of WSNEH. Of these, 69% were under the age of 40 years and were seen during the second half of the project when the guidelines for screening were not so rigidly adhered to. Nevertheless, they highlight the problem of cross-boundary flow which could act as a deterrent to establishing industrial screening on a national basis. However, the computerised interlinking of the FHSAs should ensure that recompense for screening occurs, as well as for allowing the updating of records relating to the computerised call/recall scheme. Furthermore,

the fact that family doctors' are automatically informed* of the smear result irrespective of where the screening occurs allows for adequate follow-up of abnormalities.

The project was successful in achieving its objective of focusing screening on women aged 40 or over. Nevertheless, the proportion of attenders in need of cervical screening (54% as judged by the screening doctor) was rather lower than expected, implying that nearly half of the women who attended did so in order to obtain the other examinations on offer. Indeed, the more holistic approach of offering a full Well Woman screening program was greatly appreciated by the participants and is felt to be one of the reasons for its success. The yield of cervical neoplasia however was high and it seems reasonable to conclude that at least some women benefited directly from the provision of workplace screening.

Its effect on the overall screening coverage of the District was inevitably small. In the 1981 Census, 47% of adult women in the District were working but some of these may well have been commuting to London or other nearby towns. Moreover, less than half of the companies employing women in the District agreed to provision of workplace screening so that this study could, at best, reach only 20-25% of eligible women.

The value of other tests included in the well-woman screening package is open to question. The lack of specificity of clinical breast examination shown in this study casts doubt about its cost effectiveness (including anxiety for false positive results as a cost) even if there were evidence that it detects breast cancers at a stage when their prognosis could be altered. Since available evidence suggests that it is only in women over 50 [264,265] that breast screening is of proven benefit in reducing mortality, and that clinical examination is much less sensitive than mammography, it seems unlikely that the inclusion of breast examination in a screening package for pre-menopausal women can be justified. Nevertheless, the individual tuition in breast self-examination given to each woman was extremely popular and although its value in reducing mortality is unproven it seems to be of value in giving reassurance.

Early detection and treatment of hypertension has been shown to reduce the incidence of cerebrovascular disease [135,189,266,267] but insufficient information on the outcome of referral to the GP is available to speculate about the benefit which might have resulted. The position with regard to general gynæcological and urine abnormalities

* Provided, of course, that this information is obtained during screening where it should be entered on the cervical cytology form. A copy of this form is sent to the GP (by the cytopathology laboratory) once the smear has been analysed.

is even more obscure. Like other well-woman clinics, the mobile caravan offered an outlet for women to seek advice on a whole range of problems and, although not quantified, this aspect of the service was heavily used.

The problems ranged from menstrual, gynæcological, and urinary difficulties to psycho-sexual problems, physical and sexual abuse, child abuse and even financial difficulties. These findings strongly suggest that an all female advisory service for "women's problems" is needed and is in line with work done by the Women's National Commission [268]. This group found that 94% of 6000 women interviewed wanted such a facility and, in January 1985, they presented a report to the Government in which they recommended that each regional health authority provide such a unit [269].

It is interesting that in one work-place where the offer of screening facilities had been refused, the female workforce had seen the mobile caravan in action and had pressured the management into making the service available to them. Although the mobile caravan was visited by all the women in the company concerned, many of the women saw the cytological screening not so much as a necessary health measure, but as a service which other local workers enjoyed as a fringe benefit and, of which, they had been deprived. This sociological notion of relative deprivation [270] is one possible way to gain entry to the companies which refused to comply. In other words, women in factories whose management refused the screening facilities would feel deprived when they knew this service was being offered elsewhere. Awareness of a deprivation relative to other workers leads to action and the facilities are requested. In the instance cited in this work, the women were so incensed that the management had refused the service that they actually refused to work until the issue had been resolved.

Although this method, spearheaded by the trade unions and social interaction between the workforces, might allow for access into the more reluctant companies, equating cervical cytology with a work related fringe benefit could well prevent the women from appreciating the underlying rationale of the service. And, even if regular three to five yearly screening took place within each company, many women would be lost due to the high turn over of female staff.

Thus, to persuade the women in the workplace to attend for periodic screening, they must either be long term employees of a participating company or, be made aware of the necessity of regular screening and encouraged to seek out other screening facilities at the opportune time.

7.5 Conclusion

This project has demonstrated that workplace screening can be provided in a way that encourages women to attend for screening but does not contravene District policies on eligibility for cervical cytology. It may be a useful adjunct to increase the proportion of women who have been adequately screened for cervical neoplasia. Its other benefits are less certain but it is clear that many women valued it for the advice and reassurance it gave them. Whether the benefits justify the costs of providing this form of health care requires an evaluative study, preferably randomised and controlled, in which psychological factors are included among the outcome variables.

Table of Tables

Table 7.1: INDUSTRIAL SCREENING STUDY
Comparison of Social Class by Husband & Wife's Occupation

Woman's Occupation	HUSBAND'S SOCIAL CLASS 1 / 2		3NM		3M		4 / 5		Totals
Social Class 1 / 2	106	72.6%	9	6.2%	28	19.2%	3	2.1%	146
	34.0%		16.4%		12.8%		3.5%		21.7%
Social Class 3NM	146	51.6%	31	11.0%	77	27.2%	29	10.2%	283
	46.8%		56.4%		35.2%		33.7%		42.1%
Social Class 3M	21	26.6%	4	5.1%	42	53.2%	12	15.2%	79
	6.7%		7.3%		19.2%		14.0%		11.8%
Social Class 4 / 5	39	23.8%	11	6.7%	72	43.9%	42	25.6%	164
	12.5%		20.0%		32.9%		48.8%		24.4%
Totals	312	46.4%	55	8.2%	219	32.6%	86	12.8%	672

Hypotheses

H0 The proportion of women classified to the the 4 social class categoriesis the same irrespective of the spouse's social class

H1 The social class of husband and wife are related

Statistical Test

Chi Square with significance level P = <0.05

Decision

Chi square	DF	P< =	H0?
116.01	9	0.0001	Reject

Table 7.2: INDUSTRIAL SCREENING STUDY
Screening History: Verbal Description v. Laboratory Records

Cross–check	Sample: Hysterectomy		Sample: Other		Totals
No Lab. Records Found	56 29.8%	19.0%	238 28.0%	81.0%	294 28.3%
Lab. & Pt. Dates Agree	43 22.9%	9.8%	395 46.5%	90.2%	438 42.2%
Pt. Overestimated Time	3 1.6%	4.5%	63 7.4%	95.5%	66 6.4%
Pt. Underestimated Time	2 1.1%	4.3%	45 5.3%	95.7%	47 4.5%
Pt. Unaware of Prev. Smear	16 8.5%	66.7%	8 0.9%	33.3%	24 2.3%
Patient's Dates Taken (Lab. / Pt. discrepancy)	4 2.1%	7.0%	53 6.2%	93.0%	57 5.5%
Patient's Dates Taken (Insufficient lab. data)	42 22.3%	91.3%	4 0.5%	8.7%	46 4.4%
Lab. Dates Taken (No data from patient)	7 3.7%	100.0%	0 0.0%	0.0%	7 0.7%
Lab. Dates Taken (Lab. / Pt. discrepancy)	14 7.4%	66.7%	7 0.8%	33.3%	21 2.0%
Insufficient Data	1 0.5%	2.6%	37 4.4%	97.4%	38 3.7%
Totals	188	18.1%	850	81.9%	1038

No statistical analysis reported

Table 7.3: INDUSTRIAL SCREENING STUDY
Age by Interval between Screenings

Screening Interval	Age: Under 40 yrs		Age: 40 yrs & over		Totals
Under 1 year	15 19.2%	25.0%	45 9.4%	75.0%	60 10.8%
1 to 2 years	20 25.6%	17.5%	94 19.6%	82.5%	114 20.4%
2 to 3 years	23 29.5%	13.1%	153 31.9%	86.9%	176 31.5%
3 to 4 years	10 12.8%	15.4%	55 11.5%	84.6%	65 11.6%
4 to 5 years	6 7.7%	6.6%	85 17.7%	93.4%	91 16.3%
6 to 10 years	4 5.1%	9.8%	37 7.7%	90.2%	41 7.3%
Over 10 years	0 0.0%	0.0%	11 2.3%	100.0%	11 2.0%
Totals	78	14.0%	480	86.0%	558

Hypotheses

H0 The proportion of women classified to the the alternative interval categories is the same irrespective of age

H1 Age and the interval between screeenings are related

Statistical Test

Chi Square with significance level P= <0.05

Decision

Chi square	DF	P<=	H0?
14.01	6	0.03	Reject

Table of Figures

Figure 7.1 Industrial Screening Study Demographic Comparison

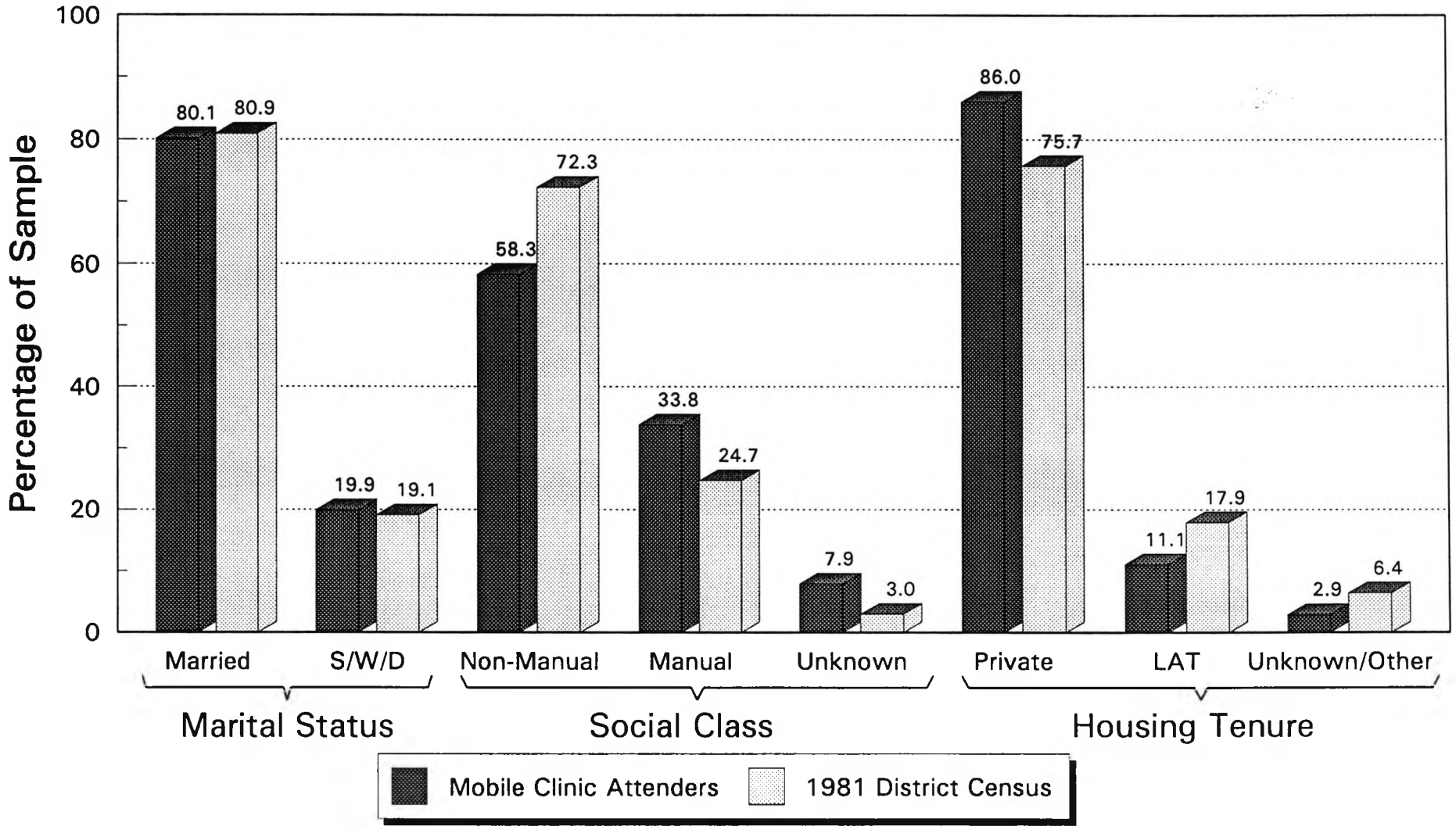


Figure 7.2 Industrial Screening Study
Housing Tenure distribution by Age

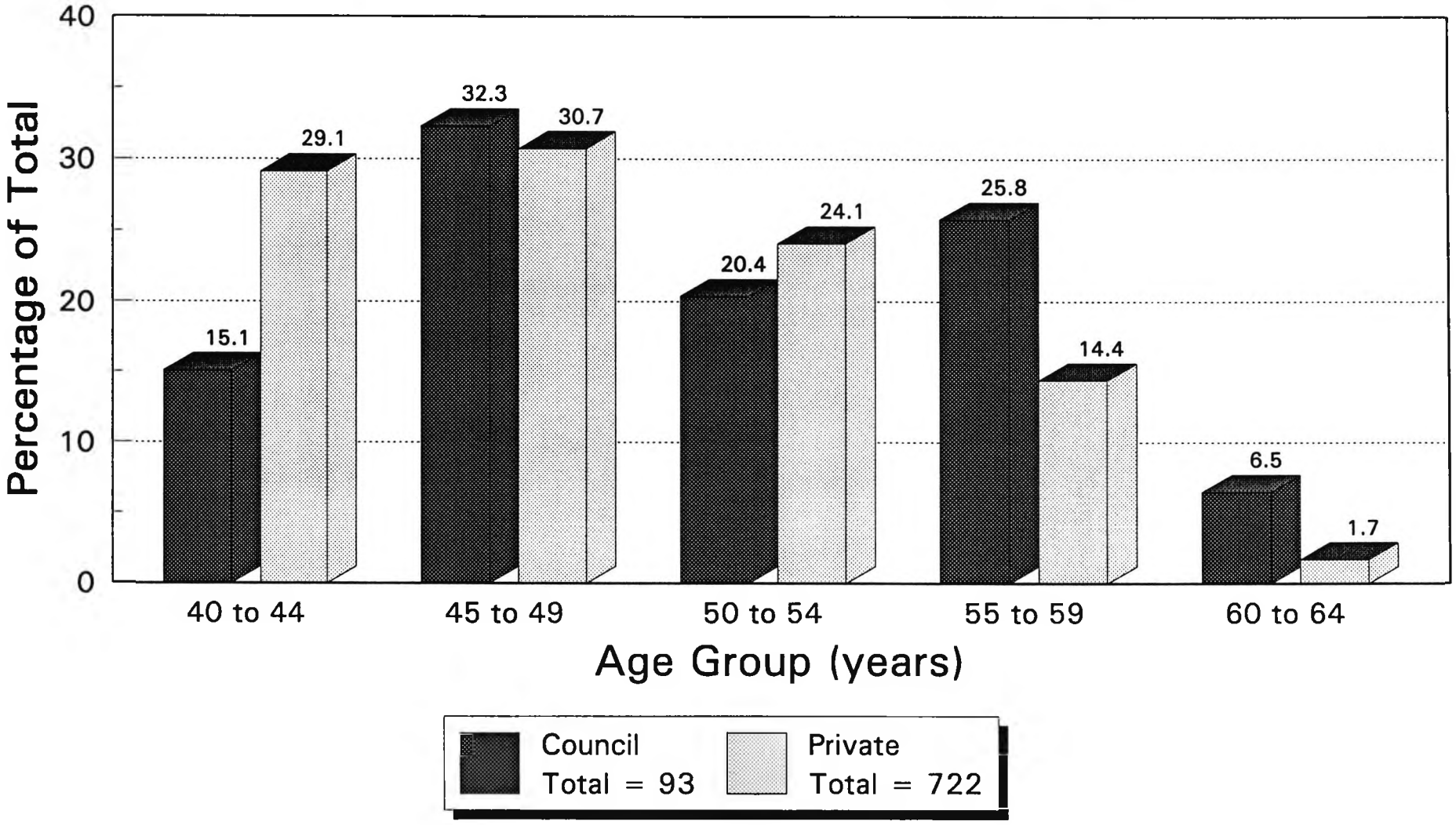


Figure 7.3 Industrial Screening Study
Screening History of Attenders

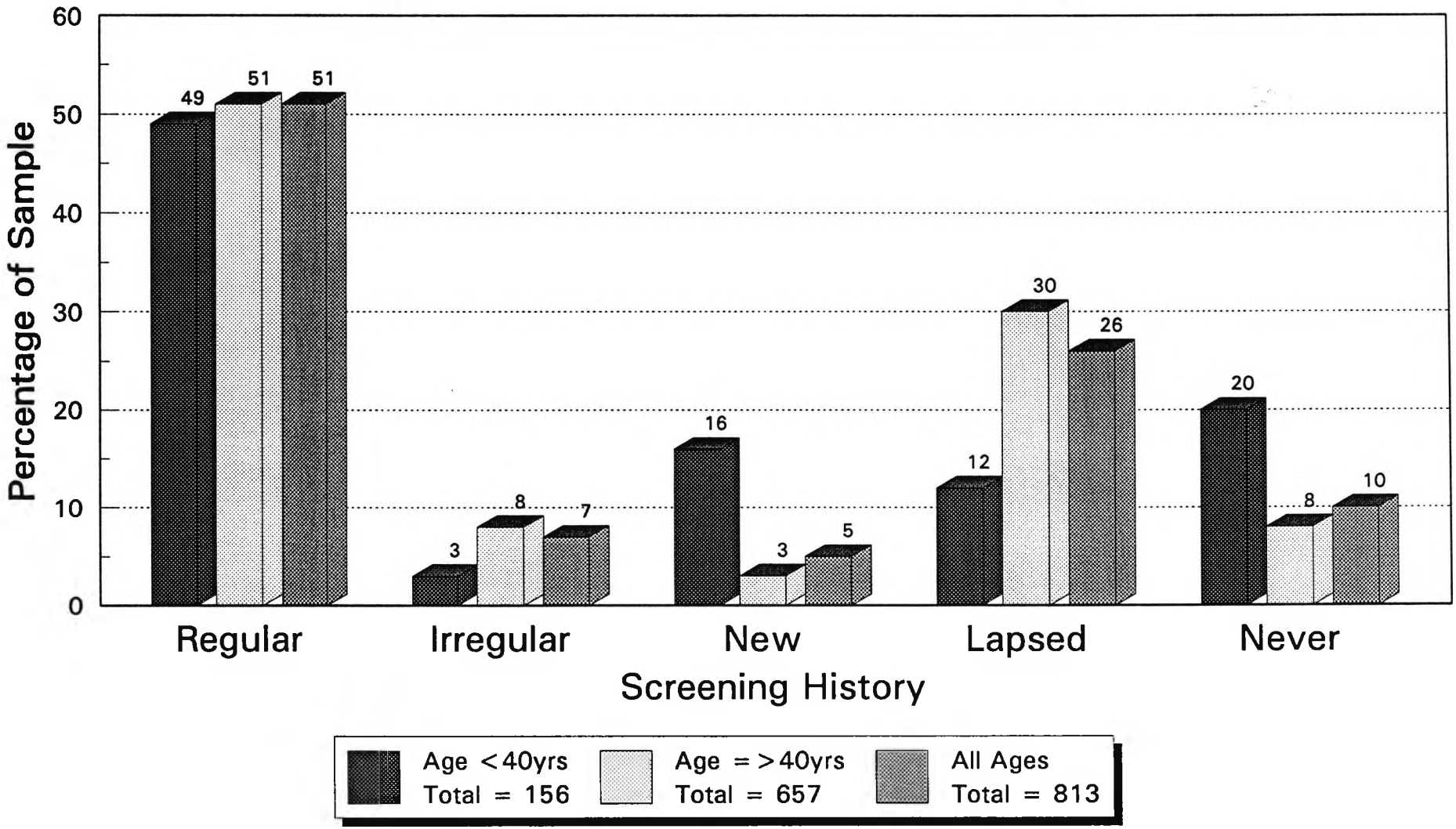


Figure 7.4 Industrial Screening Study
Clinic Attendance by Age

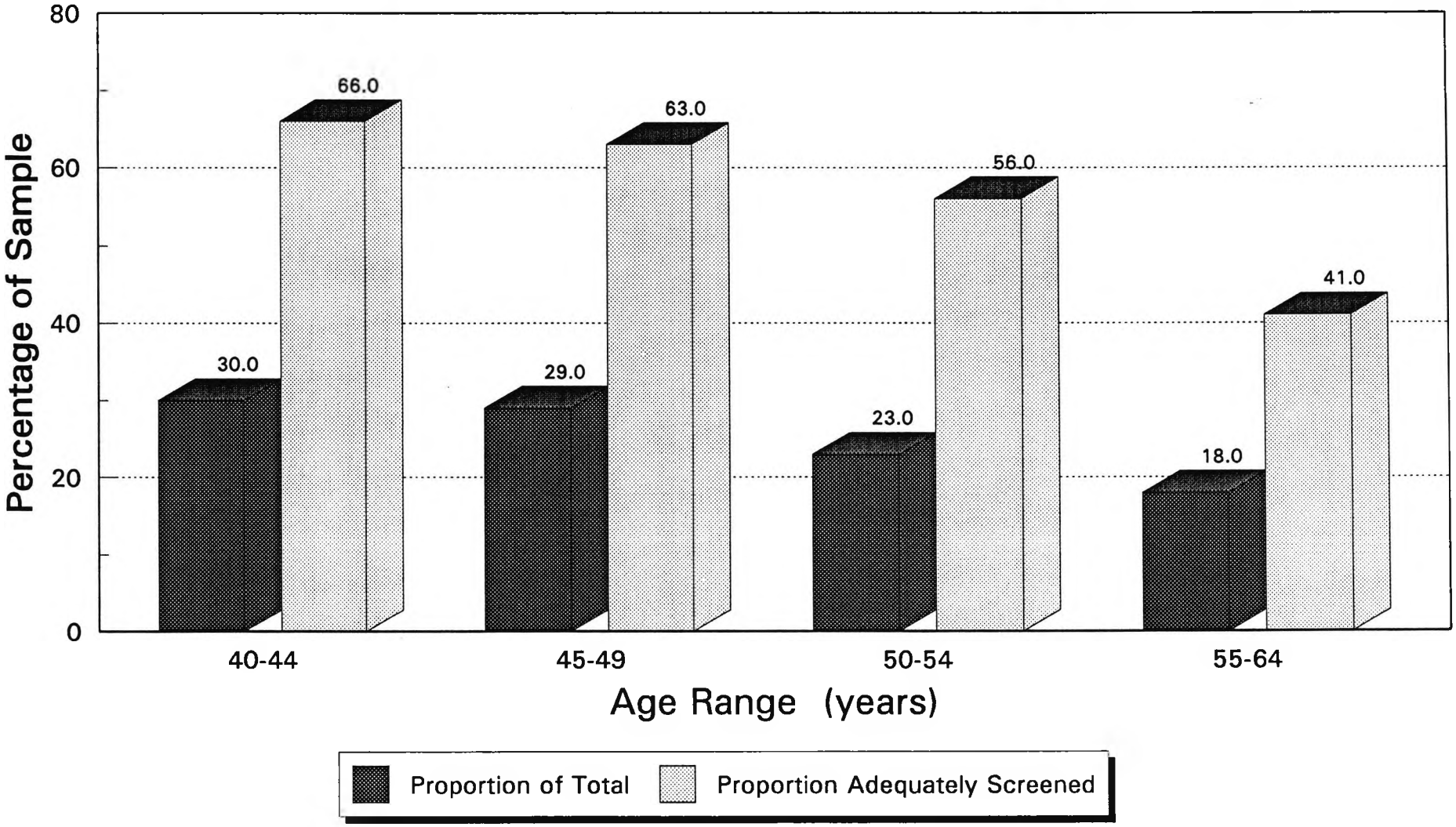
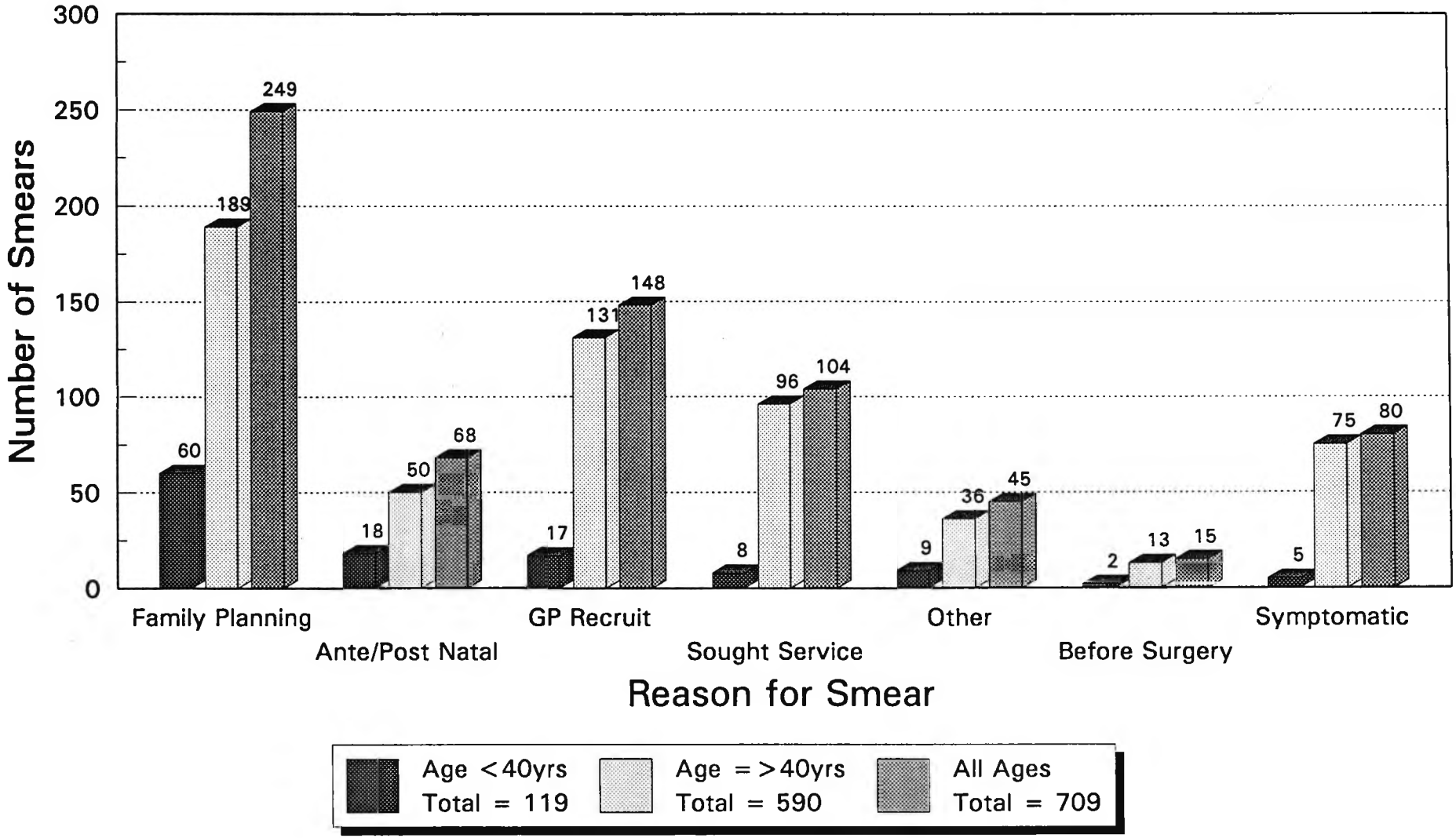


Figure 7.5 Industrial Screening Study
First Cervical Smear by Age



CHAPTER 8
GENERAL PRACTITIONER CASE NOTE REVIEW
CROSS DISTRICT COMPARISON

8.1 Summary

In order to determine whether the three projects already described significantly increased the proportion of women adequately screened for cervical neoplasia, all General Practitioners within the four concerned Health Districts were requested to participate in two separate case note reviews. 85% of eligible family doctors agreed to be involved and 4596 patients were selected from the Family Health Service Authority registers. The replies abstracted from these patients records were cross-checked with the details held by the 15 cytopathology laboratories supplying the Health Districts involved.

Although the number of women selected was too small to make any valid statistical inferences about the efficacy of the intervention programmes, the subsequent analysis of the combined pre- and post-intervention surveys showed that one-third of the women for whom the screening history was known were adequately screened for cervical cancer. Attendance for screening was strongly related to age and housing tenure, and also differed considerably across the four participating Health Districts. This work also highlighted the inaccuracies contained in the data held by both the Family Health Service Authorities and the General Practitioners.

8.2 Introduction

Across the single control and three intervention Health Districts, one method of evaluation common to all was established. This attempted to measure the screening history of a random sample of women before the interventions and again one year later.

The selection of North West Surrey as the fourth District was dictated more by events than choice. Of the remaining 10 Health Districts within the South West Thames Regional Health Authority from which the control District could have been selected, one had a computerised call/recall scheme based on the electoral register. Five were preparing for the FHSA computerisation and the concomitant call/recall scheme and intimated that help at a District level would not be forthcoming. For the remainder, the Health Education Departments were actively pursuing cervical recruitment and their efforts, although small-scale, might have skewed any results obtained.

Due to the close proximity of the two Surrey Districts concern was expressed that women screened on the mobile caravan might also be independently selected for the GP case note review study. A data check was established and it transpired that this had occurred in one instance only.

8.3 Methodology

Current lists of all GPs practicing within, or with patients inside the boundaries of, the four Health Districts were obtained from the relevant FHSA. Each GP was contacted individually by letter, the research explained and his/her permission sought:

(1) for the research team to select a random sample of 5 women patients * aged 40-64 years, from the FHSA registers noting their name, address, date of birth and NHS number.

(2) to provide information to answer, on research forms for each women ** , the following questions:

   (a) Has this patient ever had a cervical smear?
   If 'yes', please record the years they were taken.

   (b) Has she ever had an abnormal smear result?

   (c) Has she ever been diagnosed as having invasive carcinoma of the cervix?

   (d) Has she ever been diagnosed as having in situ carcinoma of the cervix?

   (e) Has she ever had a hysterectomy?
   If 'yes', has she had cervical or vault smears since then?

(3) to give permission to allow for the examination of each woman's records in relevant cytopathology laboratories.

Following receipt of the GP's written permission, a random sample of female patients were selected from the relevant FHSA.

One FHSA was partially computerised at the commencement of the project. During the second stage this was completely automated and a second was in the process of being computerised. All the rest held their records on a manual kardex system.

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* The number of 5 patients from every consenting GPs list was obtained as: -

(a) even allowing for an 80% response rate from GPs and an approximate 10% error rate in the information obtained from the FHSAs, this would provide the required number across all Health Districts acknowledging the fact that some areas had a fewer number of GPs than the others, and

(b) following consultation with individual GPs, five questionnaires was seen as the maximum that they could reasonably be expected to complete.

** The complete questionnaire is shown in Appendix E.

Selection of subjects was obtained by the researcher picking five cards at random from the drawers of FHSA held registration cards * . If the patient selected did not reach the specified requirements, the researcher would continue working forward until a suitable patient was obtained. She would then record the name, address, date of birth, NHS number and years registered with the family doctor or practice. In the case of a computerised catalogue, the researcher would scroll through the records, stopping at random intervals and proceeding as above.

Once the patients had been selected, the questionnaires were sent out to the GPs. If they had not been returned within eight weeks (and following a reminder letter and phone call), the doctor concerned was offered the services of a researcher to visit his/her practice and abstract the details from the patients' records. A total of 120 GPs accepted this offer.

15 cytopathology laboratories were visited to cross-check the data obtained from the GPs. All but three laboratories used the national cervical cytology form and in most instances the records were stored alphabetically by year, usually with the abnormal reports stored separately. With the exception of one laboratory, it was possible to access records for at least the previous five years although, in some cases, these were incomplete.

Once the cross checking was finished the women were classified according to their previous screening history as outlined in Section 3.

The identical procedure was repeated one year later following completion of the intervention programmes.

8.4 Results

8.4.1 General Practitioner Response Rates

The response rate for the eligible GPs in the pre-intervention phase was 83.5%, although this varied from 76% in Croydon to 96% in WSNEH where significantly more GPs agreed to help after the first letter. Post-intervention the overall response rate rose to 86.5% although, again, Croydon had the lowest response rate (78%) and WSNEH the highest (96%).

* See Appendix A for details of a more scientific approach to sampling which had to be abandoned due to insuperable clerical work.

8.4.2 Questionnaires Received

Due to list size, it was not always possible to select five patients from each consenting doctor's list. In all, 4596 patients were selected from the FHSA registers but only 4228 questionnaires were returned by the GPs; 2042 from the pre-intervention phase and 2186 following the completion of the recruitment methods. 12 patients, when approached by their family doctor to give consent for the release of their records, refused to participate.

139 (3%) returned questionnaires were incomplete. In a further 411 (10%), only constructed notes were available to the family doctor, or the forms were found to have registration errors directly attributable to the FHSA records (Figure 8.1). Thus, of the 4596 questionnaires distributed, only 3678 (80%) contained useful information regarding previous attendance for cervical cytology.

8.4.3 Cross Checking of General Practitioner's Data with Laboratory Records

In Croydon Health District, all of the details received from the GPs were cross checked with the records held by the local cytopathology laboratory. Of the 1338 women selected for this District, laboratory records were found for 651 (49%). In 480 cases (36%) the woman's screening history was derived solely from the records held by the family doctor and, for a further 207 (15%), no cytological information was forthcoming from either source (Table 8.1).

For the 651 women where both laboratory data and information from the GP was available, there was agreement between the two sources in 522 instances (80%). But, in the remaining 129 (20%) cases alterations were made as the laboratory held information additional to that provided by the GPs. Consensus between these two authorities was most marked among the women who had been screened within the preceding five years. Where the discrepancies did arise it was usually when screening had not occurred for a longer interval. On the basis of this intelligence (and due to limitations of both time and staff) it was decided that, where the laboratory records were difficult to access, efforts would be concentrated on seeking the smear forms for those women who were not satisfactorily classified as 'regular attenders' by their GP, or where there was any doubt about the screening history.

Thus, across all four Health Districts, with the exception of the 12 patients who did not wish to be involved in this study, and the 746 who were classified satisfactorily by the questionnaire returned from the GP, the records of 3838 individuals * were subject to cross checking with laboratory held data.

In all, 41% of records were found ** although this figure fell to 37% when the Croydon data was excluded from the analysis. Indeed, Table 8.1 shows a significantly higher concordance between the laboratory and the GPs records within Croydon Health District. But, it also shows that there were many more alterations made to the screening histories within this area. However, of all the facilities visited, Croydon's Wandle Valley Hospital laboratory had the most organised system of recording previous cytology and also extended the furthest back in time - in some cases to the mid 1950's. So, it is felt that this finding is more a reflection of the completeness of Wandle Valley's records as compared to the other Health Districts.

In 288 instances (8% of all the records checked) the information held by the laboratories were found to be the most recent and Table 8.2 lists the exact breakdown of the re-classification across all four Health Districts. 40 (14%) women whose family doctor stated that they had never been smeared had received cytology, more than half within the preceding five years. A further 58 (20%) who had been categorised as 'lapsed attenders' were found to be adequately screened, while 107 (37%) 'new recruits' and 25 (9%) 'irregular attenders' were actually 'regular attenders' - that is, they had received two or more smears at regular intervals, the last within the preceding five years. For the remaining 58 'unclassifiable' women the laboratories were able to provide screening histories, showing that 72% had been screened within the preceding five years. Overall, in the cross-checked data, there were significantly more regular attenders for cervical cytology (Chi square = 22.23, 5df, P = <0.001).

Following the laboratories cross-checking and across all four Health Districts, screening histories were determined for 3878 women, 85% of those selected and, excluding those women outside the age range and the male and deceased patients, 86% of those assumed eligible for cervical cytology. The highest figures were obtained for WSNEH (88%) and the lowest for RTR (79%).

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* Strictly speaking, only 3756 of these were actually assumed to be eligible for screening since this figure includes the 82 individuals whose status was disputed by the family doctors (i.e. dead, male or outside age range) but whom were listed as suitable on the FHSA computer. No details on any of these individuals were uncovered in the laboratory records and they were coded to the 'unclassifiable' category in Table 8.1.

** 42% if the ineligible category was excluded.

8.4.4 Before versus After Analysis

Figure 8.2 details the change in screening proportions across the pre- and post-intervention samples for each Health District. When the percentage changes were combined, the control District of North West Surrey measured the greatest increase in the number of women who had received cytology within the preceding five years (19%), followed by Croydon (10%) and WSNEH (8%). Conversely, RTR Health District showed a 2% decrease in the number of adequately screened women.

But, the case note reviews cannot be seen to be an adequate reflection of the success or failure of the recruitment drives since the number of patients necessary in order to be 95% confident of showing a 10% or greater improvement in the proportion of the population adequately screened * was not met. Furthermore, sampling error resulted in a disproportionate number of women aged 40-44 years being selected in the post-intervention phase, leading to a significant increase in the number of regular attenders during this stage. In addition, the composition of the sample selected differed with relation to age, housing tenure and marital status from the information contained in the 1981 Small Area Statistics. There was also little affiliation between the four Health Districts with regard to demographic characteristics. In the Surrey Health Districts the population was more stable, comprising pre-dominantly married women who were resident in their own property. The reverse was true for Croydon and RTR.

Although it was not possible to make any valid statistical inferences about the efficacy of the intervention programmes, the detail of the information obtained was felt to merit further analysis, particularly with regard to determining an accurate assessment of screening uptake. Thus, the following presents a breakdown of the combined pre- and post-intervention surveys.

8.4.5 Screening History (combined pre- & post-intervention surveys).

16% of the 3878 women for whom the screening history was known had undergone hysterectomy involving removal of the cervix ** . 17% had never been screened while a further 18% had not received cytology for an interval greater than five years.

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* That is, an increase in adequately screened women from observed 36% of the pilot studies to a desired 45% - Power = .95 (1.64); significance level = .05 (1.96).

** The 37 women who had undergone sub-total hysterectomy were classified according to their screening history.

17% had been screened within this time, but half were first time attenders and the remainder sought the service infrequently. Only 32% were regularly screened for cervical cancer (Figure 8.3).

Figure 8.4 details the difference in screening history across Health Districts and shows that North West Surrey had the lowest percentage of inadequately screened women (29%). 33% of the women in WSNEH had not been screened for an interval greater than five years, compared to 38% in Croydon and 40% in RTR.

33% of the women resident in their own property received regular screening compared with only 22% living in local authority housing (Chi square = 37.79, 5df, P = <0.001 - Figure 8.5). This latter group also had a higher percentage of women who had never been screened (22% cf. 16%) or who had undergone hysterectomy (19% cf. 15%).

Previous attendance for cervical cytology was strongly related to age with more of the younger women (40-49 years) being regular attenders for the service (Chi square = 261.06, 16df, P = <0.01 - Figure 8.6). There were more inadequately screened women aged over 55, while hysterectomy was most common in those women currently 50-54 years.

152 women had a history of abnormal cytology. Subsequently, 84 (55%) of these were regularly screened, 23 (15% - combined lapsed and irregular attenders) were inadequately screened and 44 (26%) had undergone hysterectomy.

17 (11%) of these women were council tenants and the remaining 135 were resident in their own homes. For both groups the number of abnormalites formed just over 3% of their total number, and no difference in the degrees of abnormality was detected across tenure. But, as the women resident in the private sector attended more frequently for screening with 89% having received at least one smear, compared with only 11% of council tenants (P=<0.0001) who were also significantly older (P=0.02) and, therefore, would be expected to present with a higher number of aberrant smears, it is possible that the questionaire revealed a bias for women who have more tests and are therefore more likely to diagnosed with an abnormality.

8.5 Discussion

8.5.1 Patient Selection and GP Compliance

Overall, the degree of compliance from the GPs was greater than anticipated, averaging 85%, although there was a marked variation across Health Districts

In all 4596 patients were selected from the lists held by the Family Health Service Authorities, well outside the 6120 needed for valid statistical inference. This low number was a consequence of small lists resulting from a surprisingly high turnover of family doctors, particularly in RTR Health District. During the pre-intervention phase there were 41 GPs with lists that did not contain any suitable women and an additional 87 from whose records it was impossible to sample the required number of patients. In the post-intervention phase this problem was further exacerbated by losing 38 family doctors who had participated during the initial study and had either retired, died or left the practice during the time of the interventions. The lists of these doctors were primarily incorporated into those of their colleagues, with any replacement practitioners working on a locum basis and having to gradually build up their own practice. Among the family doctors who had their own lists and were not acting as locums' to their affiliated practices, the list sizes ranged from 3 to 4502 patients!

4228 of the 4596 questionnaires distributed were returned, but only 80% of these contained information pertinent to the study. 3% of those returned were incompletely filled out, and in a further 411 (10%) instances no details were forthcoming from the GP. When this latter category was looked at in more detail, it was found that almost half resulted from errors in the data held by the FHSA. These inaccuracies closely mirrored those found within the computerised call/recall study, with mis-registration (not registered with, or had left practice) being the most common cause of error. In seven cases men were listed as women on the FHSA files and, further inaccuracies led to the selection of an 18 month old girl, a 97 year old woman and 70 deceased! In 222 instances the GPs were unable to fill out the questionnaire since they only had constructed notes available. That is, only a summary of the patient's medical history was available as the notes had not yet been transferred from the previous practice. In one instance the woman had been with her 'new' practitioner for four years and the old records had still not arrived.

Following the checking of all the screening histories of the women selected with the information held by the local cytopathology laboratory within one Health District, it was found to be unnecessary to verify the previous attendance for cervical cytology

of all the women who were listed by their family doctor as 'regular attenders'. Thus, across the four Health Districts, 3756 records belonging to women who were assumed to be eligible for cytology and whose screening history was in some doubt were cross-checked. Data was found on 1569 (42%) women although there was a marked variation across Health District. Of the 1569 laboratory records unearthed, 288 (18%) provided more accurate information than that obtained from the family doctors alone.

In all, across the data received from the participating doctors and that abstracted from the laboratory records, it was possible to determine screening histories for 3878 women, 86% of those assumed eligible for cervical cytology. The highest figures were obtained for WSNEH (88%) and the lowest for RTR Health District (79%). 16% of these women had undergone hysterectomy, and while 49% had been screened within the preceding five years, only 32% of the total sought the service on a regular basis. In all, 35% of these women were inadequately screened for cervical cancer.

There was a marked variation between the fifteen cytopathology facilities visited with regard to data storage, ease of access and length of time the cytology records covered. The problems encountered with cross checking the information obtained from the GPs with the records held by the cytopathology laboratories can be summarised as follows:

(1) Women who had remarried or had otherwise changed their surname were difficult to track down as previous surname was often not listed on the FHSA registration card.

(2) Smears taken as a hospital in or out-patient usually contained no name or date of birth. Identification took place solely on hospital number.

(3) Population mobility. For women who have recently moved into an area, there was no way of tracing any previous smears; consequently all information was obtained from the GPs. This problem was particularly acute in Croydon Health District where women were significantly more likely to be registered with their GPs for less than five years.

(4) The laboratory records, for the most part, consisted of the final copy of the National Form - i.e. the fourth carbon reprint. Originally very faint it appears to have a life of about four years before disappearing altogether. This problem was most acute at Queen Mary's, Roehampton (RTR Health District).

(5) Sequential records proved impossible to check. That is, records which were numbered and stored on the basis of their arrival at the laboratory. This occurred at three laboratories visited by the researchers.

(6) It proved impossible to trace the records of women who had attended privately for cervical cytology.

Since GPs should receive copies of all the smears taken from their patients, irrespective of where and what Health District the examination took place in, it was originally envisaged that the family doctors' records would be the most detailed and that cross-checking with the laboratories would only confirm the information already obtained.

Indeed, of the 1569 laboratory records found, there was marked disagreement in only 18%. However, this concordance was only relevant to our coding classifications of regular attender, lapsed attender etc and, if a direct comparison had been done between the number of smear records held by the GPs and those held by the laboratories, the latter would have undoubtedly been the more detailed.

Changes to the coding classification occurred in 288 instances, where the change in status from 'new recruit', 'lapsed' or 'irregular' attender to 'regular attender' were the most marked. But the most striking finding was that 40 women who had initially been classified by their GPs as never having had a smear, had in fact been screened, 21 of them within the preceding five years. The laboratories were also able to provide screening histories for 58 women for whom the family doctor had no records. Almost three-quarters of these had been screened within the preceding five years.

The finding that many of the family doctors were unaware of the most recent of their patients smears suggests some problems in the lines of communication between the laboratory/originator of the procedure and the GPs. But this assumes that GPs do not lose their records are diligent both in their note keeping and the accuracy with which they filled out the questionnaires. While it proved impossible to quantify the discrepancies between the laboratory records and those held by the family doctors', on the basis of the 120 practices visited by the research team, the following possibilities for error were isolated;

(1) GPs do not always keep their copies of the cervical smear forms. Some make coded entries in the notes (e.g. CC-OK; SR3/12 *), while others discard the laboratory reports without entering the results in the patient's records.

(2) Not all cytology forms are opened. Two sealed cytology reports - both over 18 months old - were unearthed by the researchers in two separate patient's records.

* Smear - repeat in three months

(3) Patients cytology records were often mis-filed and transposition between patients with similar names was not uncommon.

Although not tested scientifically, the younger doctors (judged as those who had been in practice for less than ten years) appeared to be considerably better at recording screening details. They also seemed to be based in larger, well organised practices which had much better cytology services (female practitioners and some evening clinics), thus reflecting the change of emphasis towards preventive medicine which had occurred over the last decade. The worst offenders, both in terms of accurate records and completion of the questionnaires, were those doctors with large, single-handed practices.

8.6 Conclusion

The sampling error resulting in significant age differences across the pre- and post-intervention case note reviews, as well as the lack of subjects necessary for valid statistical analysis, renders this study unreliable as an indicator of the success or failure of the three screening programmes undertaken. Nevertheless, it has shown that less than one-third of the women with a known cytological history, were regularly screened for cervical cancer, and that attendance for cervical cytology seem to be primarily related to age and housing tenure.

Table of Tables

Table 8.1: CASE NOTE REVIEW STUDY
Origin of Screening History following Cross–Check of Lab. & GP Records

	DISTRICT									
	Intervention						Control			
Origin	Croydon		WSNEH		RTR		NWS		Totals	
GP Records Only	480	20.8%	725	31.4%	534	23.1%	570	24.7%	2309	(a)
	35.9%		58.3%		47.7%		64.5%		50.4%	
Agreement between GP & Lab Records	522	40.7%	290	22.6%	309	24.1%	160	12.5%	1281	
	39.0%		23.3%		27.6%		18.1%		27.9%	
Alterations on bsais of Lab Data	129	44.8%	75	26.0%	43	14.9%	41	14.2%	288	
	9.6%		6.0%		3.8%		4.6%		6.3%	
Unclassifiable	207	29.3%	153	21.7%	233	33.0%	113	16.0%	706	(b)
	15.5%		12.3%		20.8%		12.8%		15.4%	
Totals	1338	29.2%	1243	27.1%	1119	24.4%	884	19.3%	4584	(c)

(a) Including 746 who were classified as having cytology < 5 years
(b) Including 82 who were ineligible – ie deceased, outside age range or male
(c) Excluding 12 patients who refused consent

No statistical analysis reported

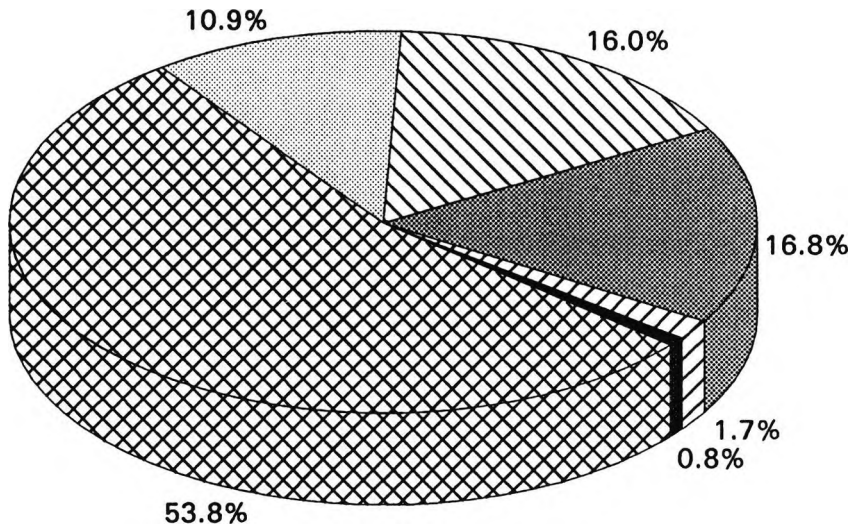
Table 8.2: CASE NOTE REVIEW STUDY
Reclassification of Screening History following Cross–Check of Lab. & GP Records

	DISTRICT								
	Intervention						Control		
Reclassification	Croydon		WSNEH		RTR		NWS		Totals
Never Attender to Lapsed Attender	10 7.8%	52.6%	6 8.0%	31.6%	2 4.7%	10.5%	1 2.4%	5.3%	19 6.6%
Never Attender to Irregular Attender	3 2.3%	100.0%	0 0.0%	0.0%	0 0.0%	0.0%	0 0.0%	0.0%	3 1.0%
Never Attender to New Recruit	5 3.9%	35.7%	4 5.3%	28.6%	3 7.0%	21.4%	2 4.9%	14.3%	14 4.9%
Never Attender to Regular Attender	1 0.8%	25.0%	1 1.3%	25.0%	2 4.7%	50.0%	0 0.0%	0.0%	4 1.4%
Lapsed Attender to Irregular Attender	2 1.6%	9.5%	10 13.3%	47.6%	3 7.0%	14.3%	6 14.6%	28.6%	21 7.3%
Lapsed Attender to Regular Attender	17 13.2%	45.9%	4 5.3%	10.8%	8 18.6%	21.6%	8 19.5%	21.6%	37 12.8%
New Recruit to Irregular Attender	5 3.9%	26.3%	6 8.0%	31.6%	4 9.3%	21.1%	4 9.8%	21.1%	19 6.6%
New Recruit to Regular Attender	39 30.2%	44.3%	29 38.7%	33.0%	9 20.9%	10.2%	11 26.8%	12.5%	88 30.6%
Irregular Attender to Regular Attender	9 7.0%	36.0%	3 4.0%	12.0%	6 14.0%	24.0%	7 17.1%	28.0%	25 8.7%
Unclassifiable to Lapsed Attender	7 5.4%	58.3%	3 4.0%	25.0%	1 2.3%	8.3%	1 2.4%	8.3%	12 4.2%
Unclassifiable to New Recruit	8 6.2%	66.7%	3 4.0%	25.0%	1 2.3%	8.3%	0 0.0%	0.0%	12 4.2%
Unclassifiable to Regular Attender	16 12.4%	66.7%	3 4.0%	12.5%	4 9.3%	16.7%	1 2.4%	4.2%	24 8.3%
Unclassifiable to Irregular Attender	4 3.1%	66.7%	2 2.7%	33.3%	0 0.0%	0.0%	0 0.0%	0.0%	6 2.1%
Unclassifiable to Hysterectomy	3 2.3%	75.0%	1 1.3%	25.0%	0 0.0%	0.0%	0 0.0%	0.0%	4 1.4%
Totals	129	44.8%	75	26.0%	43	14.9%	41	14.2%	288

No statistical analysis reported

Table of Figures

Figure 8.1 Case Note Review Study
Inaccuracies in Patient Data



Outside Age Range | Male Patient | Patient Deceased

Not Registered | Left Practice | Constructed Notes

Total = 411

Figure 8.2 Case Note Review Study
Pre- and Post-Intervention Comparison

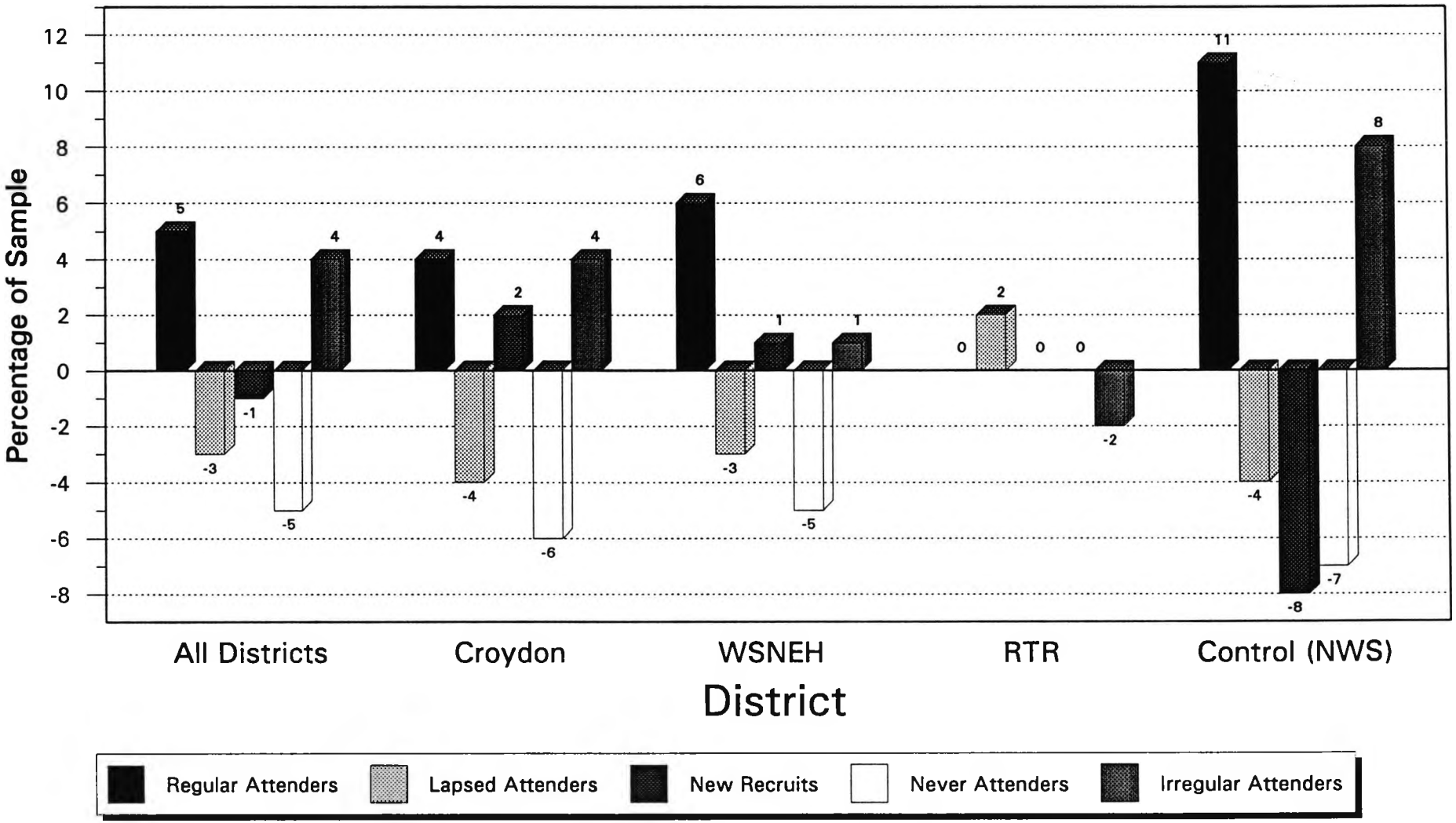


Figure 8.3 Case Note Review Study Known Screening History

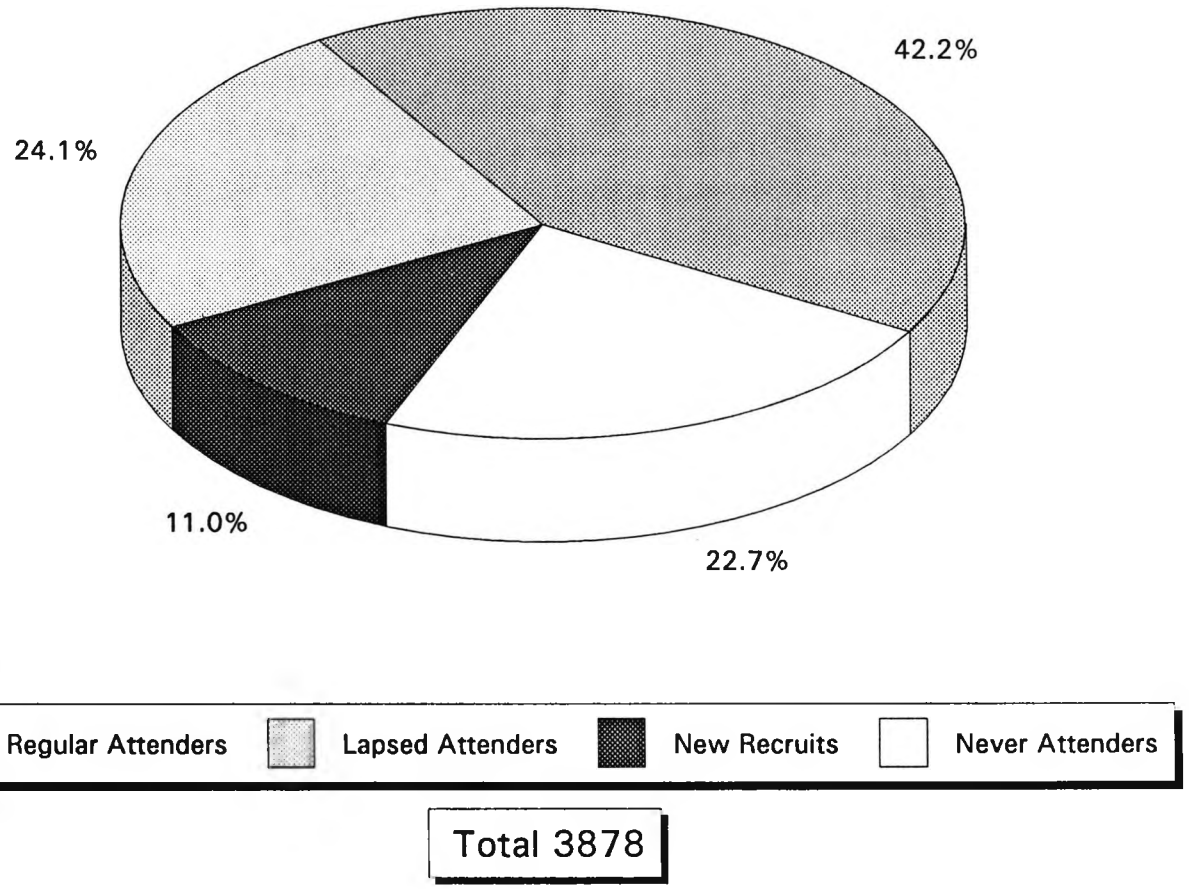


Figure 8.4 Case Note Review Study Cross-District Comparison

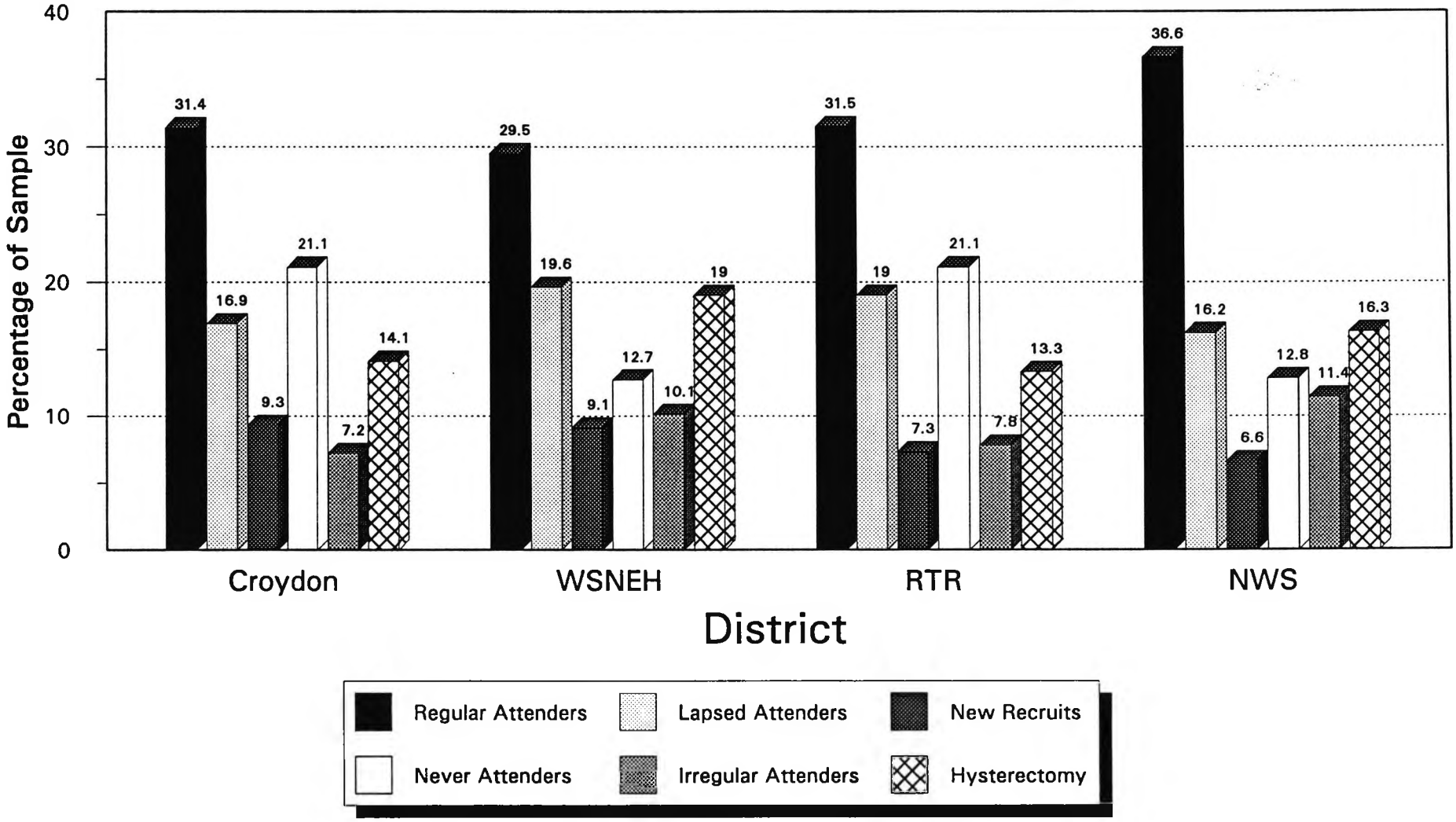


Figure 8.5 Case Note Review Study
Housing Tenure Comparison

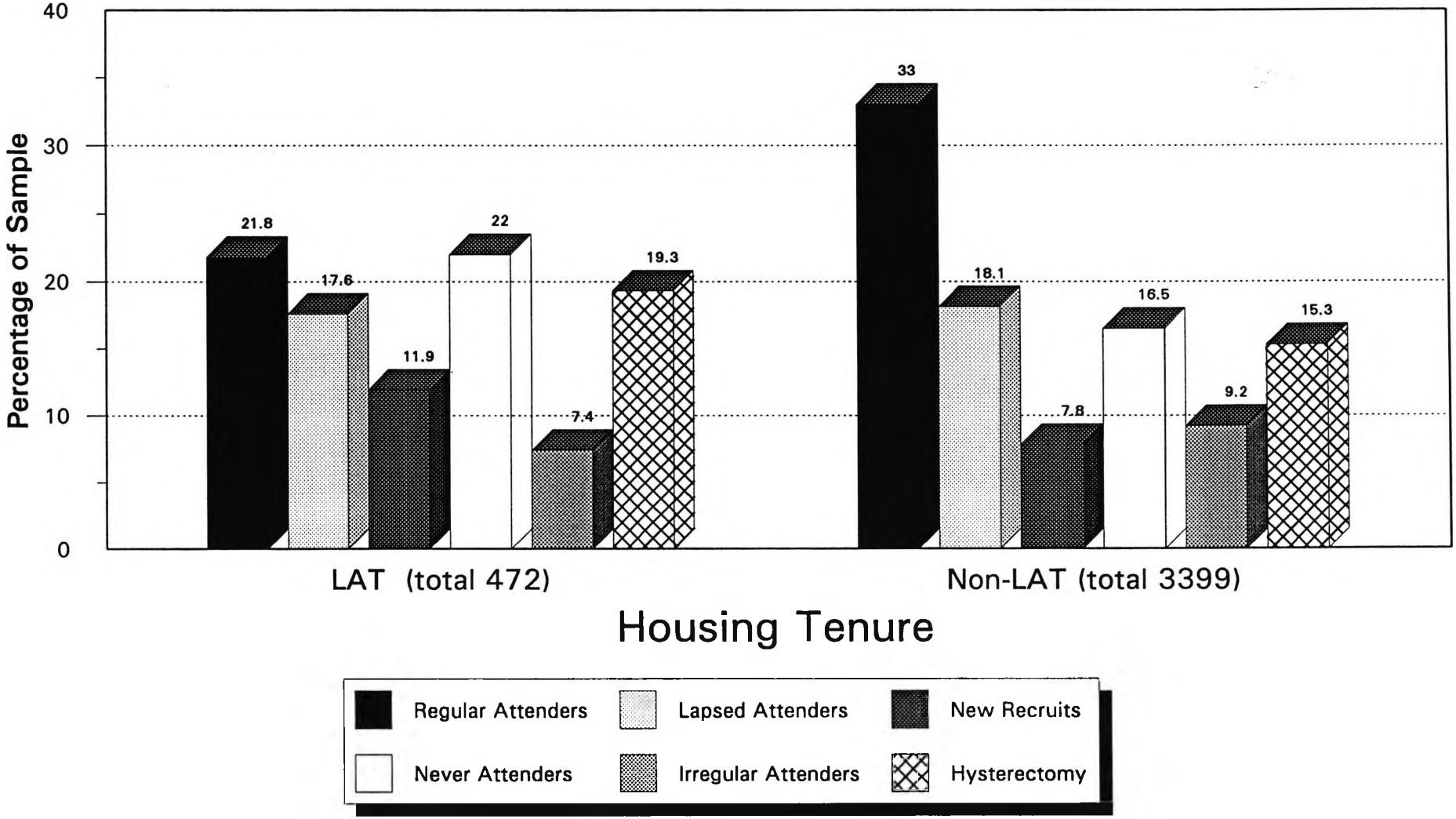
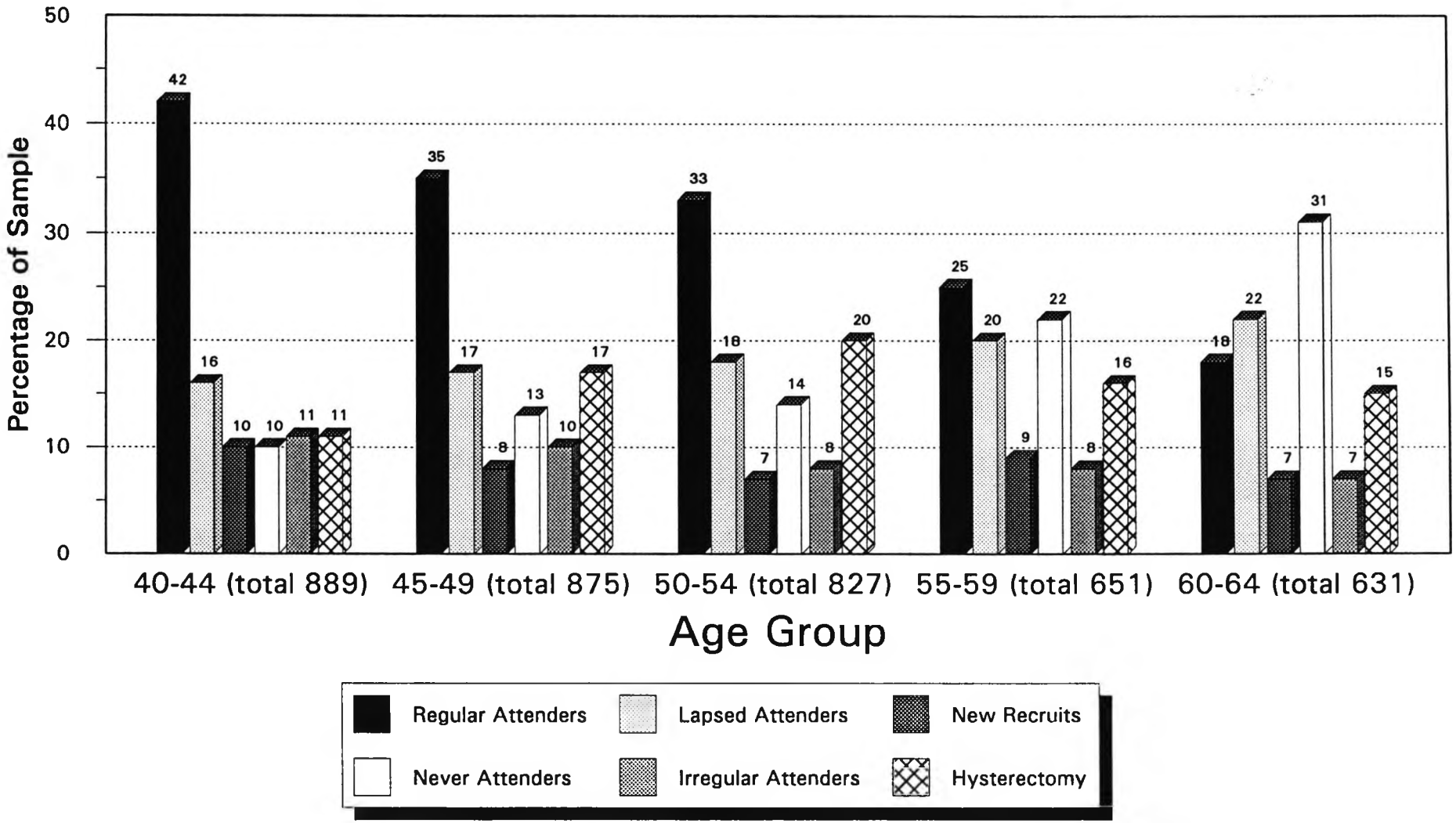


Figure 8.6 Case Note Review Study
Age Group Comparison



CHAPTER 9
GENERAL DISCUSSION

9.1 Effectiveness of the recruitment campaigns

Within the confines of this work, there can be little doubt that the most effective means of recruiting women between the ages of 40 and 64 years for cervical cytology was the mobile caravan used in the industrial screening study. Over 90% of eligible women attended the clinic, and its success is believed to result from three factors;

(1) The continuity, accessibility and enthusiasm of the all female medical team;

(2) Peer pressure from work colleagues;

(3) Ease of access.

It is impossible to determine which was the most important component. However, when the continuity of the team was disrupted during the second part of the study, the number of women attending the clinic dropped appreciably.

The high response rates were obtained at a cost. The mobile caravan was the most expensive recruitment method to run both in terms of cost (averaging about £15 per head) and time. It must also be remembered that access to the female workforce was allowed in less than half the companies contacted.

In addition, there is evidence to suggest that the re-screening rates among women initially recruited through a mobile caravan can be as low as 29% [39]. Thus, it can't be assumed that the women recruited in the industrial project will continue to seek the service for themselves and, it is possible, that the effectiveness of this intervention can only be maintained by regular visits to the workplace, and by continuing personal contact with health experts, and support from their peers.

An additional caveat in the apparent success of the industrial study is that it was the only intervention where it was possible to determine accurately the number of women at risk and their subsequent attendance for cervical cytology. And, this was not possible in all of the companies visited.

While the exact number of women aged 40-64 years issued with an invitation to attend for screening was known, the computerised call/recall was beset by errors in registration details, and the poor rate of response from the family doctors which resulted in no screening history being available for almost 60% of the women called.

The best estimate of attendance came from the 1966 women (with no known history of cervical abnormality) selected for call whose records were extensively checked with the information held by the cytopathology laboratory. 40% of this group sought screening subsequent to being issued with an invitation. Of these 13% were found to have never received cytology; 65% had been screened within the preceding five years, and 22% were lapsed attenders for the service.

Across the 8074 women invited but excluding those who presented with symptoms or some condition necessitating cytology, it can be seen that over half of the smears done as a result of the computerised letters of invitation were unnecessary as defined by the Health Authority's own criterion. Or, to paraphrase, only 13% of the invitations issued resulted in a woman in need of cytology being screened.

It was estimated that 17% of the women who had never been screened sought the service after having received an invitation. Among those who had not been screened for in excess of five years, the subsequent attendance was 62%. But, this compares adversely to the 68% attendance rate among the women who had had negative cytology within the previous three years, and to those who had not been screened for between 4-5 years, of whom 77% sought the service.

The letters of invitation were most successful in persuading women between the ages of 30 and 44 years to seek screening, and half of all attendances occurred within the first three months following the issue of the missive. Women aged 40 or more were the quickest to respond but this was felt to be related to the need for screening.

The actual cost of the cervical call/recall scheme was impossible to judge as it was backed onto the computerisation of all the FHSAs. Across the country the subsequent mechanisation of all the FHSAs cost in excess of £10 million. The initial response of only 15% of all invitations resulting in a necessary smear, in addition to the numerous unnecessary screenings, suggest that the return was not worthwhile in its initial stages. But, once the database becomes established and the reliance on family doctors diminishes, the accuracy of the registration details should improve and there should be corresponding increase in applicable cytology.

The publicity material which formed the basis of the advertising campaign undertaken in RTR Health District received much praise within the advertising world and appeared to reach a wide cross section of the population. However, although 110,000 leaflets were distributed to homes in the District and almost 400 posters were placed in areas known to be frequented by women in the target age range, the advertising had little effect either on persuading women to seek the service, or on altering attitudes towards cervical cancer. Only 36% of the women interviewed in the weeks

immediately following the distribution of the advertising material could recall having seen the poster/leaflet, and only 9% could correctly remember details contained therein.

There is no benchmark by which to gauge the success of this particular publicity campaign. The criteria used by the professional advertising agencies are not applicable and the plethora of health field studies are unable to offer definitive answers. Perhaps the most relevant comparison can be drawn with the health education publicity regarding HIV infection which occurred during the time of this study (see Chapter 6.6.3). Leaflets and posters coupled with extensive press and television coverage attempted to educate a far wider audience than the 40-64 age-group targeted by this work. Even so, concurrent studies reported that only around one-third of people interviewed could recall seeing the posters or could remember receiving a leaflet through the door. Overall, it was concluded that the advertising did little to increase knowledge about AIDS and even less to promote behaviour change. What did occur, however, was a dramatic increase in the number of low risk individuals seeking screening - a finding parallelled by the research undertaken into the so-called 'Oxford Incident'.

In view of this, it is plausible that the advertising campaign was not successful in achieving its objective (a 10% or greater increase in the number of women in the target age-range seeking screening) because the defined parameters for success were set too high. Furthermore, since the advertising was geared towards only a small percentage of the total population, the finding that 36% of this group could recall the publicity material and 9% could recollect the information it contained is, perhaps, encouraging - especially since no Social Class bias was detected across these data.

Since the estimated cost of the campaign was over £25,000, it is not an economic use of funds for one Health District alone. If, however, the advertising was more extensive across the whole of a Regional Health Authority, or even country-wide, and co-ordinated through such a body as the Health Education Authority, the cost to each individual Health District would drop sharply.

Although recommendations for future publicity campaigns have been listed in detail in Chapter 6.6.4, the most salient points are that the advertising must be designed specifically for, and in conjunction with, the target group. Relevant psychological factors need to be determined and these, along with the positive benefits of screening and the provision of female practitioners, must be emphasised in words that reflect

the literacy levels of the women concerned. The advertising needs to be seen to come from an authoritative source, as well as being sustained over time. It also must be combined with individual or small group contact.

Although the publicity campaign reported here was judged not to have fulfilled its purpose, the concurrent interviews revealed that there was much ignorance about the subject, with lack of knowledge increasing with decreasing use of the screening services. Only half of the women knew the correct anatomical terms of the female reproductive tract, and although 97% claimed to be familiar with the term cervical smear, over half (particularly those who were inadequately screened) said that it was to detect an existing cancerous condition.

These findings strongly suggest that more education and information would go some way to alleviate the problems of non-attendance for cervical screening. Indeed, the women themselves saw this as an essential component in any recruitment campaign. However, all essential information was imparted in the advertising material to little avail and, to this extent, the campaign can be judged a failure

Whether this failure occurred because the publicity material did not attract the target group or because the information was discarded as irrelevant, is impossible to say. But, many of the comments recorded by the interviewers strongly suggest that beliefs formed through direct experience take precedence over the presentation of information alone. For some women 'cancer' had innumerable meanings and connotations, many of them unconscious and fantasized. They saw it as signifying suffering and certain death, and even being a just retribution for 'bad' (i.e. promiscuous) behaviour; it was dirty and shameful - something 'nice' women didn't contract.

While these beliefs do not seem to conform to the narrower premises of scientific logic and are therefore likely to be dismissed as irrational,[271] the way such opinions are formulated are not dissimilar to those used in advanced medical science [272]. The difference between the medical models and the 'common-sense' beliefs is that the latter is an interpretation based on the individual's own life rather than on data collected on many thousands of subjects. When viewed in this context such beliefs make sense. For example, many of the older women had witnessed friends or relatives dying of cancer, often painfully and with little or no hope of cure. The stigma attached to venereal disease was linked to promiscuity and, by association, to any problems with the female genital tract. The reluctance to discuss such issues in the past had further served to heighten the lack of knowledge and consequent lack of control

about the subject. Since such beliefs are the basis of the framework the individual has constructed, which in turn forms part of her psychological core, it is not surprising that such attitudes are unaffected by the written word.

The use of the psychological factor 'Locus of Control' has been recommended since it is felt that learned helplessness - i.e. the inability to control events - is a very real condition among many of the inadequately screened women, and the only way to correct such deep rooted beliefs is to view the individual's philosophy in the context of her own experience. Indeed, this could account for the apparent success of peer pressure. Here the information is presented by someone who both knows and is known by the woman concerned; who is familiar with her background and her experiences, and whose opinion is valued. The process of interaction occurs with information passing backwards and forwards, allowing the opportunity to voice fears and prejudices.

This individual can be family, friend or spouse, although there is evidence to suggest that the last is only effective in persuading a woman to seek cytology when he is an active participant in family activities and decisions. However, such men are usually found in non-manual occupations [273].

But, irrespective of who the individual might be, attitude and behaviour change require personalized communication [8,40,87,89,91,93,94,95,97,182,199]. This would go some way to account for the higher response rates in the industrial screening, where the women not only had the opportunity of discussing the issue amongst themselves but also with the medical staff. Indeed this facet of the service seemed particularly important to all the women who visited the caravan. These findings are also in line with other studies [9,191].

Although not quantified, a fundamental change in attitude was noted among the women who were pressured by their peers into attending the mobile caravan for screening. Although initially very reluctant, once the procedure had been performed, worries surrounded the subject appeared to disperse and these women became extremely receptive to information about cervical cytology and firm believers in it. This change occurred within a very short space of time and long before the cytology results became known. No logical explanation can be given but, and the analogy is a poor one, it appeared to be like an initiation into a club. Once accepted, the views and beliefs of the group became the individual's own and further information was sought to justify their position. In psychological terms, the forced shift in behaviour

had led to an incongruity between behaviour and attitudes and, since the behaviour could not be undone, the attitudes were modified accordingly. Such findings are not unknown [149,274].

It was interesting to note that the inadequately screened women who were interviewed in the advertising study believed that their GP would send for them if a cervical smear test was necessary. However, the role of the GP in reaching the high risk patient is called into question by this work as both lapsed and never attenders for screening rarely visited their practitioner. Also, those women who had been registered the longest with the same practice were those who had not been screened for in excess of five years.

Paradoxically, the advertising interviews also showed that women resident in local authority housing, and those classified as 'not working' were more likely to be among those who were inadequately screened for cervical cancer. However, the same source indicated that these women saw their GPs' at least once in every eight weeks.

So, although family doctors' may be in a unique position to recruit women for cervical cytology, few appear to take advantage of this. It also seems that many GPs, particularly the older doctors working alone, do not regard cervical cytology as an important part of their work. The vast number of incomplete or blank PNLs that were returned to Croydon FHSA bears witness to this, as do the findings of the researchers who examined GPs' records. In many cases, smear forms weren't kept and only coded entries were placed in the notes. Also, some smear reports were found unopened in patients records. More worrying is the finding that one of the women who was found to have invasive cancer when she was screened in the mobile caravan, had had an abnormal smear within the preceding five years that had not been acted upon by her GP.

Overall GPs appear to do the most screening. Within the computerised call and recall study, 61% of all smears originated from GPs' surgeries, although this number was significantly higher for the older women (65%). The younger women were more likely to be screened through the Family Planning Services.

Thus, GPs do play an important role in the screening programme particularly for the older women who no longer require contraceptive advice. The family doctor is also the only continuing care specialist involved. They are also essential in maintaining the accuracy of population registers upon which any call/recall scheme rests, since a patient is much more likely to inform her family doctor of change of name and local address than the FHSA, in case a home visit is required. However, the computerised call/recall study and the case note review study revealed that family doctors

don't always inform the FHSA of changes of address or details regarding marital status particularly with regard to name changes. It was not possible to quantify such errors within the confines of these two studies but other work suggest that family doctors only notify the FHSA of changes in patients' circumstances in 25% of cases (230) *

9.2 How to increase screening uptake.

This work strongly suggests that women aged 50 years or more, especially those in the lower social classes and/or resident in council housing are the most likely to be inadequately screened for cancer of the *cervix uteri*, and that particular effort is necessary to persuade them to seek regular cytology.

For this age-group the importance of female practitioners cannot be stressed too strongly, nor the provision of specialist clinics. This was particularly true for the women who had fallen out of the screening system and for whom an all female clinic appears to act as an incentive for re-screening.

Information regarding the procedure both beforehand and during the actual taking of the smear was found to be of particular importance in the mobile caravan. Being 'talked through' the procedure appeared to give women some measure of control over what was happening to them as well as a greater understanding of how their own bodies worked.

This implies that education is necessary at all stages of the process, and for those women who are already motivated to take action and merely lack information, knowledge presented in the form of a poster or leaflet may well be a sufficient persuader. Intelligence coming from an authoritative source, such as a letter from their family doctor has been shown to be sufficient to entice many women who had fallen out of the screening system to re-attend. But, for the bulk of the women who have never been screened, information presented in the form of a leaflet/poster, or a letter from their family doctor is not sufficient to make them seek cytology. For these women, an interactive, more personalized situation is necessary.

* Caveat: The GP contract which was implemented after the completion of the intervention programmes, pays a bonus for practices that reach 50% screening coverage and a much larger bonus for those that reach 80%. This encourages them to keep their lists accurate (eliminating "ghost" patients from the denominator), as well as encouraging screening. However, it is criticised because those who just fail to reach the target level it is a disincentive - why make all the effort when you get no return? For 1990/1991, FHSA records show that nationally 74% of women aged 20-64 have had a smear in the past five years. The relative contributions of the call/recall scheme and the GP incentives are not known.

While the view is often expressed [5,75,115,192] that medical 'experts' are more effective in a face-to-face situation in persuading the unscreened to seek the service, in many cases women are reticent to "waste the doctor's time" by asking questions that are aired freely in discussion with friends and colleagues. Thus peer pressure is an important component in getting women to attend for cervical cytology.

Any functioning cytology system is dependent on a well maintained database. In an ideal world, identification of the inadequately screened women would be possible from the accurate and complete records held by the FHSA, constantly updated by diligent GPs. Furthermore the recommendations put forward to Croydon FHSA should be implemented. That is, if after two letters of invitation the woman had not attended for screening, the local Health Visitors should be informed and should visit the address to determine reasons for non-attendance. If a woman categorically refuses to attend her wishes should be respected but an annual reminder letter continue to be sent.

As it is the predominantly older women who are inadequately screened, this is a situation that will, most probably, dissipate with time. Younger women are more used to being screened than those over the over of 40 since cervical cytology is performed routinely in relation to contraceptive services and pregnancy. This, combined with the greater emphasis placed on preventive measures that are adhered to by the younger members of the medical profession and the computerised call/recall, will ensure that most younger women will be screened routinely throughout their lives. However, there will always be those who 'fall through the net' and occasional other methods of recruitment over and above the letter of invitation will continue to be necessary.

It is very difficult to offer solutions to what is a very complex issue. The conundrum of persuading women to attend for cervical cytology is best illustrated by identical twins who were interviewed in one of the pilot studies. These women (aged 49 years) had seen their mother die of cervical cancer at the age of 45. To all intents and purposes these women were the same. They were both married, had three children, both worked part-time and lived on the same council estate. One sought screening every year; the other refused to attend.

So, not only are there differences in screening patterns across social class, age and marital status, there are also differences within like groups. How these factors interact within any one individual is the result of social and cultural learning influences, and further depends on such functions as the person's level of skill in learning and executing self-change and her perception of her ability to control her fate. These

components are specific to each individual and, in order to determine the inter-relationship between these factors, a more detailed study concentrating on psychological factors is necessary.

9.3 Overall Conclusions.

The mobile caravan used for the industrial screening was the most efficient method of the three studied in recruiting women aged between 40 and 64 years for cervical cytology. However, it was also the most expensive, and possibly the worst in achieving population coverage since it was allowed in less than half of the industries within the area. Furthermore, there is little guarantee that, in the future, the women would continue to seek cytology on their own volition.

Although highly praised, the advertising campaign had little effect on screening attendances or on attitudes towards the subject.

The letters of invitation had some limited success, but a true estimate of their effect was impossible due to the innaccuracy of the Family Health Service Authority records and the lack of co-operation from the General Practitioners' involved. Although this is the system of the future, other methods of recruitment will continue to be necessary, especially for the older, previously unscreened, woman.

APPENDIX A
CASE NOTE REVIEW & INTERVIEW PILOT STUDIES

OVERVIEW

Because routine cytology statistics are not broken down by interval since last smear, the proportion of women who are adequately screened (here defined as having at least 1 smear in the past 5 years) is unknown [1]. This inquiry was set up to investigate the proportion of women aged 40 or over who had not been adequately screened, and to elicit the views and beliefs of these women in order to devise methods of recruitment to the screening programme, applicable to their level of understanding and their wishes.

To this end, two separate studies were conducted during the latter part of 1984 in Merton Health District. The first of these being a case-note review of screening history and the second an interview study of women residing in local authority housing.

Table A.1 presents a summary of the information obtained. In addition, the women who had never been screened were older than those who had received cytology, and among the sample of women who were interviewed, tended to regard screening as a diagnostic test to confirm the presence of cancer rather than as a possible means of preventing the disease. Among women who had lapsed from regular screening, the lack of a female doctor to take the smear seems to act as a disincentive.

Table A.1; Summary of Information Obtained

	Case Note Study	**Interview Study**
Compliance	Family doctors 85%	Women interviewed 54%
Number of women information received on	198	53
Unable to classify by screening history	22 (11%)	0
Number of women for whom screening histories were obtained	176 (100%)	53 (100%)
Regular attenders	29.5%	28.3%
New recruits	6.3%	5.7%
Lapsed attenders	21.0%	7.5%
Never attenders	30.7%	34.0%
Hysterectomy	12.5%	24.5%

METHOD

(1) Screening History Study

50% (n = 47) of the 94 GPs with practices in Merton * were randomly selected from the lists obtained from the local FHSA. Each doctor was approached individually and his/her co-operation sought:

(1) for the research team to select a random sample of 5 women patients aged 40-64 years from his FHSA list noting their names, addresses and dates of birth.
(2) to provide information to answer questions pertaining to each woman's cervical cytology history.
(3) for the researchers to look up each woman's records in the District Cytopathology laboratory.

40 family doctors (85%) agreed to co-operate; 3 actively refused; 2 did not answer letters or return telephone calls; and the remainder had retired from general practice since the lists were issued. 28 (70%) of the consenting practitioners were male.

Once written permission had been obtained, a random sample of 5 women were selected for each doctor from the manual index system held by the FHSA. Initially, a scientific approach towards this selection had been planned whereby the number of patients in each practice was recorded (eg 1234), and a computer generated program randomly selected 5 numbers from 1 to 1234. The researcher would then count through the cards to the first number generated. If the patient picked did not reach the specified requirements, the researcher would continue working forward until a suitable patient was obtained. For the woman selected she would then record the name, address, date of birth, NHS number and years registered with the GP or practice ** . Proceeding to the second number generated, selection would continue in this fashion until all 5 patients had been selected.

In the event, the clerical work involved proved insuperable since some practices had well in excess of 3000 patients. Consequently the researcher, in going through drawers of FHSA held registration cards, merely picked 5 cards at random and then proceeded as above.

For each of the 198 women selected the relevant GP was sent a questionnaire regarding her screening history (Appendix B). These details were subsequently cross-checked with the information held by the local cytopathology laboratories.

All of the women in this study were further classified according to housing tenure into those living in local authority housing and those resident in the private sector.

(2) Interview Study

Three large council estates were randomly selected from lists obtained from the Local Housing Authority and door to door sampling was employed (ie every door was approached). The interviewer enquired if a woman aged 40-64 was resident at the address and whether she would be willing to discuss health services provided for women in the Merton area. If consent was obtained the woman was asked a series of open ended questions, all replies were recorded verbatim and subjected to content

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* A cross-district comparison using the Small Area Statistics showed that Merton was not dissimilar in demographic construction from the more deprived areas of Croydon and Roehampton. It was also readily accessible from the Royal Marsden Hospital and utilised the same laboratory facilities as Croydon.

** The determination of the length of time that a patient had been registered with her GP was undertaken to allow us to quantify the error resulting from no records being available for the patient due to recent transfer to the practice. Thus the crucial factor was not the length of time registered with a single GP but the length of time that she had been registered with a particular practice - ie the interval that her records had remained in one place, and it is this that is reported here. This information was derived from the records held by the FHSA during the initial patient sampling.

analysis. Questions on demographic characteristics, and use of health services were followed by a more detailed probing into knowledge and attitudes towards, as well as attendance for, cervical cytology. 98 women of the target age range were approached but only 53 (54%) agreed to be interviewed.

In both studies each woman was classified according to her attendance for cervical cytology (Table A.2).

Table A.2; Classification by Previous Attendance for Cervical Cytology.	
Regular attenders	2 or more smears at regular intervals during the last 10 years, the most recent being within the last 5 years.
New recruits	first cervical smear within the last 5 years.
Lapsed attenders	those women who had had cervical cytology but not within the last 5 years.
Never attenders	never had cervical cytology.
Hysterectomy	both total and sub-total procedures.

RESULTS

(1) Screening History Study

Of the 198 women randomly selected from the GP lists, it was possible to classify accurately 176 of them (89%) on the basis of the family doctors' records and the details held by the cytopathology laboratory. The remaining 22 had either moved or died, no records were obtainable on them, or they were otherwise unclassifiable.

22 (12.5%) of the 176 women for whom data was available had had a hysterectomy, 4 of them subtotal and 18 total, one of the latter being for cervical cancer. This patient subsequently receives a vault smear each year, but only 1 of the 4 women who had had sub-total hysterectomies was regularly screened.

Table A.3 shows that women resident in local authority housing were more likely to have undergone hysterectomy than their peers resident in the private sector (24% v. 10%). Furthermore, when the hysterectomies were excluded, the proportion of women in need of screening (lapsed attenders and never attenders together) was higher among local authority tenants (62% v 59%). However, neither of these findings attained significance.

Table A.3: Screening status of the women in the Case Note Review Study.							
	Local Authority Tenant		Non Local Authority Tenant		Total		Mean age in years
	No.	%	No.	%	No.	%	
Regular attender	7	20.6	45	31.7	52	29.5	48.3
New recruit	3	8.8	8	5.6	11	6.3	48.0
Lapsed attender	7	20.6	30	21.1	37	21.0	49.5
Never attender	9	26.5	45	31.7	54	30.7	54.7
Hysterectomy	8	23.5	14	9.9	22	12.5	55.3
Total	34		142		176		

Table A.3 also shows a disparity in age between those women who were regular attenders and those who had never attended for cervical cytology, the former being younger (P = <0.005). No significant age differences were found between council residents and those who lived in the private sector. This held true for all but one group when broken down by screening history, the exception being lapsed attenders among whom private tenants (mean age 54.7) were significantly older at the time of their last test than council tenants (mean age 48.3) (P = <0.01).

The average length of time that a woman had been registered with her GP was 11.75 years (standard deviation 9.8 years). Overall, the women resident in private accommodation had been registered with the same practice longer than those living in council housing, but when broken down by attendance for cervical cytology, the group that had been registered the longest with the same practice were those women who had never attended for cervical cytology (mean = 13.5 years; standard deviation = 11.25). Conversely, the group that had been registered with the same practice for the shortest time were the new recruits (mean = 9.2 years; standard deviation = 11.48).

(2) Interview Study

The 53 women interviewed (out of a potential 98 subjects) were all local authority tenants. Details of own and head of household's occupation were obtained and it was found that Social Class IIIM, IV and V were significantly over-represented in local authority housing compared with the distribution of Social Class in the Borough of Merton as a whole (Chi-square = 33.929: 5df, P =<0.001). All women were, by definition, =>40, but an impression was gained that the responders were younger than those from whom no interview was obtained.

Table A.4 shows the screening history of the interviewees. In all, only 34% were adequately screened for cervical cancer. Those classified as regular attenders for cervical cytology were significantly younger than those who had never been screened (t = 3.496: P = <0.001) and also had more children (t = 2.503, P = <0.001).

Table A.4: Screening status of the women in the Interview Study.				
	Local Authority Tenant		Mean age in years	Mean number of children
	No	%		
Regular attender	15	*28.3*	51.0	2.9
New recruit	3	*5.7*	48.0	0.7
Lapsed attender	4	*18.9*	54.5	2.0
Never attender	18	*34.0*	59.5	1.7
Hysterectomy	13	*24.5*	58.2	2.3
Total	53			

13 women (25%) had had hysterectomies, 11 for fibroids and 2 for carcinoma of the cervix. Of the former group only 4 had had a previous history of cervical cytology and neither of the 2 cancer sufferers had ever had a smear prior to the diagnosis of the disease. Although both these women had annual appointments with their gynæcological consultants, they did not know if they had a vault smear taken.

When the women * who had ever had cervical cytology were asked the reason for their first smear, 13 (59%) replied that they had been recruited through routine screening at Family Planning or Ante Natal Clinics; 1 (5%) had been recruited through her GP and 8 (36%) actually sought the service for themselves. Of these, 3 did so because of media publicity about carcinoma of the cervix; 2 did so because they had friends or relatives with the disease; 2 were bullied by friends, and 1 went only because she had abnormal symptoms.

Of the 15 women who attended regularly for the service, 3 (20%) have smears every year, 4 (27%) are screened every 2 years, 6 (40%) every 3 years and the remaining 2 have smears at 5 yearly intervals. When asked how often they thought they should have a cervical smear the answers were synonymous with actual frequency except for 2 women who had quinquennial check-ups. Both felt it was not frequent enough but left it to their doctor to decide. Only 1 woman had heard of the 5 yearly policy and she felt it was inadequate.

34 of the interviewed women (64%) had been registered with the same practice for more than 10 years but, among the women who had never been screened, this proportion was 78%. The number of times a woman claimed to visit her GP over the course of a year varied markedly and the group which actually saw their GP less than any other were the never attenders.

From the interview data it was possible to determine possible reason why women do not attend for cervical screening.

* This figure excludes those women who had undergone hysterectomy.

(1) Ignorance

25% of the women did not know what a cervical smear was but this figure was 50% for non attenders (Table A.5). Furthermore, not a single woman was familiar with such terms as "Pap test" or "Cytotest". Only 1 woman, who had previously had a mildly abnormal smear, was correctly able to define the purpose of a cervical smear as the early detection of abnormal cells on the cervix. For those who knew that it was a 'cancer test', the regular attenders said it was to stop them getting cancer whereas the never attenders saw it as a diagnostic tool, useful only to confirm the presence of cancer.

(2) Embarrassment

6 of the 18 regular attenders volunteered that they would not have a cervical smear taken by a male doctor. Of the 4 lapsed attenders, 2 stopped attending when their cytology clinics were closed, and the other 2 when they no longer attended Family Planning Clinics. All of these women had male GPs who were either single-handed or in a practice without a woman partner, and they all stated that their reason for not attending was the lack of a female doctor. Almost 85% of the women who were classified as never attenders had male GPs.

(3) Fear

Although the most common view (75% in each group) was a 'not worried' fatalistic approach towards cancer of the cervix, there were two markedly different reasons for such an attitude. The regular attenders were not worried because they saw a cervical smear as a preventive measure whereas the never attenders said they would rather not know if they had cancer. Regular attenders were more likely to see cervical cancer as 'always' curable. More of the never attenders than the regular attenders had had a close friend or relative with cervical cancer.

When asked "do you think you ought to have a cervical smear" none of the 18 never attenders said 'yes'. Only 3 said 'maybe' or 'perhaps' but qualified their answers with excuses such as they "did not have the time". The rest said 'no', 8 adding emphatically that nothing would make them seek cervical cytology, while 6 said they would only do so if something was wrong. A view implicit in many of their comments but only directly expressed by 1 woman was the idea that cervical cytology was a trivial matter and one that she should not bother her doctor with.

Table A.5: Perceived purpose of a cervical smear Test among women in the Interview Study.

	Cancer Test	No mention of cancer	Don't know
Regular attender	11	5	2
New recruit	3	1	1
Lapsed attender	3	1	0
Never attender	8	3	8

This table results from content analysis in which the categories are not necessarily mutually exclusive; ie a woman may answer 'cancer test' and 'internal examination' gaining entry to two categories. Therefore the total number of answers can be greater than the total number of participants.

DISCUSSION

The two studies discussed in this paper have demonstrated that among a sample of women aged 40-64 with intact uteri, almost 60% are inadequately screened for cervical cancer.

This work has particularly focussed on those women resident in local authority housing and has shown this to be a good indicator of low socio-economic class. It has been demonstrated that there is a higher than expected incidence of cervical neoplasia among council tenants [2]. Both of these findings are consistent with the known association of cervical cancer and social class and suggest that women resident in local authority housing should be regarded as a special risk group. This is further supported by the findings that the older women (50 or over) resident in council housing are less likely to be screened than those over 50 years in the private sector. Further evidence of the inequity of distribution of screening resources is apparent when it is found that the regular attenders are, on average, receiving a smear as often as every 2.5 years.

Of course redistribution of screening to achieve better coverage of the at risk group is not simply a matter of reducing the frequency of screening low risk women and assuming the slack will be taken up by the attendance of previously inadequately screened high risk women [3]. The interview study was consistent with previous studies [4,5,6,7,8] which found that non-attenders hold more fatalistic negative views about cancer, and see the function of screening in terms of confirming unpleasant news rather than as a preventive measure. These views are hard to counter by conventional health education measures but, nevertheless, the study suggests some practical measures which could be taken.

It appears that for many women, male doctors seem to act as a disincentive for screening. Thus the option of having a smear taken by a woman is an obvious means that the health service can organise in order to increase uptake. It is possible that many lapsed attenders could be brought back into the screening programme by re-inviting them to a clinic staffed by women after they had ceased to need the services of the Family Planning Clinic.

Since the majority of regular attenders in the interviewed sample were recruited through Family Planning or Ante Natal Clinics, it cannot be assumed that a woman will be motivated to seek the service for herself. Thus, a service initiated approach is necessary for the older previously unscreened woman. Such an approach is likely to be effective if it is in the form of a personal invitation from someone known to the women such as her GP. However, for maximum impact, it is necessary for any communication to contain, firstly, clear and concise definitions of any medical terms involved - eg cervix; cervical smear. Secondly, since this study has determined that many women see a cervical smear as of use only to confirm the presence of cancer, the pre-symptom benefit of the test needs to be emphasized along with the value of early detection and treatment which does not necessarily involve hospitalisation. Thirdly, and perhaps most importantly, the offer of a female practitioner.

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APPENDIX B

QUESTIONNAIRE ISSUED TO GENERAL PRACTITIONERS

PLEASE RETURN THIS FORM TO

Dr J. Chamberlain
Regional Specialist in Cancer Services
South West Thames Regional Cancer Organisation
Block E
Royal Marsden Hospital
Downs Road
SUTTON
Surrey SM2 5PT

PATIENT'S NAME DATE OF BIRTH

ADDRESS NHS NUMBER

Marital Status: Single [ ] Widowed [ ] Married [ ] Divorced [ ]

(1) Has this patient ever had a cervical smear?

Yes [ ] No [ ] Don't know [ ]
If Yes please complete (a) and (b) for all the smears that she has had

(1a) Screening Smears

Please circle year(s)

85	84	83	82	81
80	79	78	77	76
75	74	73	72	71
70	69	68	67	66
65	64	63	62	61
60	59	58	57	56

(1b) Diagnostic smears and follow up of previous abnormals

Please circle year(s)

85	84	83	82	81
80	79	78	77	76
75	74	73	72	71
70	69	68	67	66
65	64	63	62	61
60	59	58	57	56

(2) Has she ever had an abnormal smear result (ie Class III, IV or V or smears mentioning dyskaryosis, dysplasia, CIN or neoplasia)?

No [ ] Yes [ ] which year(s) .....

which result(s) .....

(3) Has she ever been diagnosed as having invasive carcinoma of the cervix?

No [ ] Yes [ ] which year(s) .....

(4) Has she ever been diagnosed as having in situ cancer of the cervix?

No [ ] Yes [ ] which year(s) .....

(5) Has she ever had a hysterectomy?

No [ ] Yes: TOTAL HYSTERECTOMY

year.....

indication.....

No [ ] Yes: SUBTOTAL HYSTERECTOMY

year.....

indication.....

(6) If Yes, has she had cervical or vault smears since then?

No [ ] Yes [ ] (if yes, include in Question 1 above)

APPENDIX C

PILOT STUDY TO GAUGE THE EFFECT OF THE ADVERSE PUBLICITY RESULTING FROM THE 'OXFORD INCIDENT'

OVERVIEW

As a consequence of the 'Oxford Incident', there was a significant increase in the number of cervical smears received by the cytopathology laboratory at Queen Mary's Hospital, Roehampton. In order to determine what effect the adverse publicity had on screening patterns, a random 15% of women who sought screening were selected for 3 alternate months for the year preceding the publicity and over the duration of the incident. However, due to the poor quality of the records, it was possible to obtain details from only 1 out of every 3 forms sampled. Thus, the results reflect the screening history of a 5% sample of all women who attended for screening over the allotted time period.

This small study showed that there was no significant increase in the proportion of women aged under 40 attending for cervical cytology during the adverse publicity. There was however, a significant increase in the number of older women attending but they were aged mainly between 40 and 49 years and were already adequately screened for cancer of the *cervix uteri*. Overall, the mean age of the women attending over the duration of the media coverage were younger than their counterparts who had been screened in the 1984 sample.

METHOD

A random 15% of women were selected for a 6 month period from the laboratory day book. This listed, on a day to day basis, the names of all women from whom slides had been received. The experimental design of the study is shown in Table C.1.

Table C.1: experimental design of the study

Month	1984	1985
January	Control	Control
March	Control	Experimental
May	Control	Experimental

The January figure formed the baseline control data, the no publicity group, while the March and May figures were combined to form the publicity group.

At Queen Mary's Hospital (QMH), the 5th copy of the smear request/result form is kept and filed alphabetically by year. All results are kept for a period of 6 years and, at the time of this study, the laboratory details extended back to 1979. However, 2 out of every 3 of these final copies were illegible. As a consequence, the following results report the details of only a 5% sample as the logistics of obtaining a 15% sample * proved impossible in the time allocated.

The details for each woman selected were checked against the cytopathology records across each year back to 1979. Age and screening history were recorded.

* In order to obtain a 15% sample, 3600 women would have had to be selected and each of their records checked individually over 6 years.

RESULTS

(1) Attendance for Screening

Across the laboratory figures which listed all cytology taken, significantly more women attended for screening during the media publicity (Table C.2). However, while this increase is reflected in percentage terms across the women sampled, the difference does not attain significance (Table C.3).

Table C.2: Number of smears analysed by QMH; 1984 versus 1985 sample.

	1984	1985	Total
No publicity	1073 (31.2%)	1044 (26.6%)	2117 (28.7%)
Publicity	2361 (68.8%)	2887 (73.4%)	5118 (71.3%)
Total	3434 (46.6%)	3931 (53.4%)	7365 (100%)

Chi Square, 1df (with Yates correction) = 19.4406, P=0.001

H_o: There is no difference in the proportion of analysed smears classified to the two publicity categories across time (1984 v 1985).
H_1: A difference exists in the proportion of analysed smears classified to the two publicity categories across time (1984 v 1985).

Table C.3: Number of smears selected for study; 1984 versus 1985 sample.

	1984	1985	Total
No publicity	54 (31.4%)	52 (26.4%)	106 (28.7%)
Publicity	118 (68.6%)	145 (73.6%)	263 (71.3%)
Total	172 (46.6%)	197 (53.4%)	369 (100%)

Chi Square, 1df (with Yates correction) = 0.8901, P = NS

H_o: Within the study sample, there is no difference in the proportion of smears classified to the two publicity categories across time (1984 v 1985).
H_1: Within the study sample, a difference exists in the proportion of smears classified to the two publicity categories across time (1984 v 1985).

(2) Age of Women Sampled

Across the combined publicity and the non-publicity groups, 72% of all smears analysed came from women under the age of 40, with the largest single group being women aged between 20-29 years. Although there were significantly more women age =>40 in the 1985 sample (Table C.4), the number of smears performed on women aged 40-64 years formed only 34% of the total number of smears taken during the

adverse publicity. A breakdown of the data into 10 yearly age groups revealed that the increase lay predominantly with women aged 40-49 years (11% in 1984; 23% in 1985).

Table C.4: Breakdown by age for sample selected for study; 1984 versus 1985 sample.

	1984	1985	Total
Under 40 yrs	93 (78.8%)	96 (66.2%)	189 (71.9%)
40 yrs & over	25 (21.2%)	49 (33.8%)	74 (28.1%)
Total	118 (44.9%)	145 (55.1%)	263 (100%)
Chi Square, 1df (with Yates correction) = 4.5090, P = <0.02			

H_o: Within the study sample, there is no difference in the proportion of smears classified to the two age categories across time (1984 v 1985).
H_1: Within the study sample, a difference exists in the proportion of smears classified to the two age categories across time (1984 v 1985).

The mean age for the older women was 49.5 years, although the women in the 1985 sample were younger (48.6 years) than their counterparts in the 1984 sample (50.4). No such difference was observed for the younger women with the average age across both years being 27.6 years.

(3) Screening History of the Women Selected

For the control group, 54% of all women were regular attenders for cervical screening; 5% were lapsed attenders and 41% were new recruits. No differences were observed across either the 1984 versus 1985 sample or when the figures were broken down by age.

Table C.5: Screening Histories of the publicity group; 1984 versus 1985 sample.

	1984	1985	Total
Regular attender	51 (43.2%)	84 (57.9%)	135 (51.3%)
Lapsed attender	11 (9.3%)	14 (9.7%)	25 (9.5%)
New recruit	56 (47.5%)	47 (32.4%)	103 (39.2%)
Total	118 (44.9%)	145 (55.1%)	263 (100%)
Chi Square = 6.5097, 2df, P = <0.05			

H_o: Within the publicity sample, there is no difference in the proportion of smears classified to the alternative attendance categories across time (1984 v 1985).

H_1: Within the publicity sample, a difference exists in the proportion of smears classified to the alternative attendance categories across time (1984 v 1985).

For the publicity group, however, a difference was observed across the two years with there being more regular attenders in the 1985 sample (Table C.5). When broken down by age, there were more regular and lapsed attenders among the women =>40, while new recruits were more frequent among the younger women (Table C.6). However, when the distribution of lapsed attenders for the two years was compared across the publicity versus non-publicity data, there was no significant difference in the distribution across the two years (Table C.7).

Table C.6: Screening Histories of the publicity group; <40 yrs versus =>40 yrs.

	<40 yrs	=>40 yrs	Total
Regular attender	90 (47.6%)	45 (60.8%)	135 (51.3%)
Lapsed attender	13 (6.9%)	12 (16.2%)	25 (9.5%)
New recruit	86 (45.5%)	17 (23.0%)	103 (39.2%)
Total	189 (71.9%)	74 (28.1%)	263 (100%)
Chi Square = 13.5733, 2df, P = <0.01			

H_o: Within the publicity sample, there is no difference in the proportion of smears classified to the alternative attendance categories across age (<40 or =>40).
H_1: Within the publicity sample, a difference exists in the proportion of smears classified to the alternative attendance categories across age (<40 or =>40).

Table C.7: Distribution of lapsed attenders - publicity versus non-publicity; 1984 versus 1985 sample.

	1984	1985	Total
No publicity	1 (8.3%)	4 (22.2%)	5 (16.7%)
Publicity	11 (91.7%)	14 (77.8%)	25 (83.3%)
Total	12 (40.0%)	18 (60.0%)	30 (100%)
Fisher Exact Probability = 0.2576.			

H_o: For the lapsed attenders, there is no difference in the proportion of smears classified to the alternative publicity categories across time (1984 v 1985).
H_1: For the lapsed attenders, a difference exists in the proportion of smears classified to the alternative publicity categories across time (1984 v 1985).

APPENDIX D

LETTER OF INVITATION USED IN COMPUTERISED CALL/RECALL

Dear Madam

My records show that you are now at the age when it would be advisable - if you have not already done so - to have a simple routine test known as a CERVICAL SMEAR.

This test will give me an early warning if there is anything wrong with the cells at the neck of the womb (the cervix), long before you experience any problems.

In the majority of women there is nothing wrong, but one or two are found to have cells that are not quite normal. These cells, if discovered in plenty of time, can be easily treated and removed without even having to go into hospital.

If you have previously had a test, I do advise that you have a CERVICAL SMEAR every five years, for your own peace of mind.

You can either have the test done here or, if you prefer, it can be done at your local clinic. If you choose to have it done here please could you telephone the surgery to make an appointment.

If you have had a test within the last twelve months, or if you cannot keep the appointment, or you will be having a period at this time, please let me know by telephoning or calling in at the surgery.

Let me know if you prefer to have the test done at a Community Health Well Woman clinic and I will ask them to send you an appointment.

Please take/bring the attached slip with you when you attend for the test.

Yours sincerely

GP's signature

CYTO1:cytdrslet2:170986

APPENDIX E

QUESTIONNAIRE USED IN ADVERTISING STUDY

SECTION 1: DEMOGRAPHIC & CODING DETAILS

Ward
Before or after interview
Patient number
Interviewer
Perceived reliability of interviewee
Ethnic origin of interviewee

SECTION 2: PERSONAL DETAILS

(1) "Would you mind telling me how old you are?"
(2) "Are you [married] [single] [divorced] [widowed] [cohabiting]?"
(3) "Is your husband employed at the moment?"
[yes] [no - retired] [no - unemployed] [no - invalid] [not applicable]
(3a) If 'yes' "Can you tell me what he does?/please describe his job."
(3b) "Is he self-employed?"
(3c) "Does he have anyone working under him?"
(4) "Do you work at all?"
[yes; full time] [yes; part time] [no]
(4a) If 'yes' "Can you tell me what you do?"
(5) Is this your own house/flat or do you rent it?"
[own] [rented]
(6a) "How old were you when you left school?"
(6b) "Have you done any studying since you left school?"
(7) "Do you have any children?" [yes] [no]
1 2 3 4 5 6 7
(8) "Are you registered with a GP?" [yes] [no]
(9) "Is your GP [male] [female]?"
(9a) If male "Are there other doctors in the same practice?"
[yes] [no]
(9b) If 'yes' "Do you ever see the woman GP?"
[always] [sometimes] [never]
(9c) "Would you prefer to see the women GP?"
[always] [sometimes] [never] [don't know] [don't mind]
(10) "How many years have you been registered with your GP?"
(11) "How often do you see your GP?"

[once a week]	[every 6 months]
[once every 2 weeks]	[every 9 months]
[once a month]	[once a year]
[every other month]	[less than once a year]
[every 3 months]	specify.....

(12) "Have you ever had any operations?" [yes] [no]
(12a) If 'yes' "What was the operation for?"
(12b) If hysterectomy "What year?"

SECTION 3: KNOWLEDGE RELATING TO CANCER OF THE CERVIX

(13) "Can you tell me anything about cancer of the cervix?"
[yes] [no] [not really]
Prompt "what do you know about it?"

(13a) "Have you heard of the cervix?"
[yes] [no] [not really]
Prompt: "Can you tell me where it is?"

(13b) "Have you heard of the neck of the womb?"
[yes] [no] [not really]
Prompt: "Can you tell me where it is?"

SECTION 4: PREVENTION & CURE OF CANCER OF THE CERVIX

(14) "Do you think that it is possible to prevent getting cancer of the cervix?"
[yes] [no] [not really]
Prompt "What would prevent it?"
"Are you sure that you can't think of anything?"

(15) "Do you think that cancer of the cervix can be cured?"
[yes] [no] [not really]
Prompt "What would cure it?"
"Are you sure that you can't think of anything?"

SECTION 5: KNOWLEDGE ABOUT CERVICAL SMEARS

(16a)	"Have you heard of the cervical smear test?"	[yes]	[no]
(16b)	"Have you heard of the PAP test?"	[yes]	[no]
(16c)	"Have you heard of the cytotest?"	[yes]	[no]
(16d)	"Have you heard of the cervical test?"	[yes]	[no]

"Can you tell me what these tests are for?"

SECTION 6: SCREENING HISTORY

(17) "Have you ever had any of the above tests?"
[yes] [no] [don't know]

If 'no' jump to NEVER ATTENDER

If 'yes'

(17a) "How many have you had?"

"Can you think back to you first test?"

(17b) "How did you first know about the test?"
(17c) "Where did you have it done?"
(17d) "What made you have it done?"
(17e) "How did you find the test?"
(17f) "Where you given the result of your last test?"
(17g) "How long ago was your last test?"

(17h) ***If LAPSED ATTENDER***
"Are there any reasons why you have not had a cervical smear test recently?"

(17i) "Do you think that you ought to have one done?"

If NEVER ATTENDER

(17j) "Are there any reasons why you have never had a cervical smear test?"

(17k) "Do you think that you ought to have one done?"

ALL WOMEN

(17l) "How often do you think a cervical smear ought to have one done?"

SECTION 7: EFFECT OF ADVERTISING

(18) "Have you ever seen a poster or leaflet suggesting that you have a cervical smear?"
[yes] [no]

If 'yes'

(18a) "Can you remember where you saw it?"
(18b) "Can you remember what it said?"
(18c) "Can you remember what it looked like?"

SECTION 8: FRIEND'S REACTION TO CERVICAL CYTOLOGY

(19) "Can you think of anything that would persuade your friends to have a cervical smear?"

Prompt "Are you sure that you can't think of anything?"

SECTION 9: OWN REACTION TO CERVICAL CYTOLOGY

(20) "If you had never had a cervical smear what would persuade you to have one done?"

Prompt "Are you sure that you can't think of anything?"

SECTION 10: SCREENING PREFERENCES

(21) "Where would you prefer to have a smear done?"

Prompt "For example at your GP's surgery or at a local clinic or at a hospital out patient department?"

[GP's surgery] [clinic] [don't mind] [don't know]
[other .....]

(22) "Would you prefer a woman to take the smear?"
[yes] [no] [don't mind] [don't know]

(23) "Do you know where your nearest smear clinic is?"
[yes] [no]

(24) "Are there any questions you would like to ask me?"

APPENDIX F
QUESTIONNAIRE CODING FRAME USED IN ADVERTISING STUDY

SECTION 1: DEMOGRAPHIC & CODING DETAILS

Ward

1 = Roehampton	}	
2 = Parkside	}	HIGH RISK
3 = Westhill	}	
4 = East Putney	}	MODERATE RISK
5 = Southfields	}	
6 = Richmond Town	}	LOW RISK
7 = East Sheen	}	

Before or after interview

Patient number 1 to 1012

Interviewer 1 to 3

Perceived reliability of interviewee

1 = very reliable
2 = reliable
3 = doubtful
4 = unreliable
5 = very unreliable
6 = difficult to assess
7 = not noted

To allow for valid analysis the following variables were combined
'very reliable' with 'reliable'
'unreliable' with 'very unreliable'

Ethnic origin of interviewee

1 = White - English
2 = Irish
3 = European
4 = Asian
5 = Negro
6 = Chinese
7 = other
8 = not noted

To allow for valid analysis the following variables were combined
'White Irish' with 'white European' to form 'white - other'
'Asian', 'negro' and 'Chinese' into 'other'

SECTION 2: PERSONAL DETAILS

(1) **Age**: 40 to 64 years
To allow for valid analysis 5 yearly age ranges were created

(2) **Marital Status** [married] [single] [divorced] [widowed] [cohabiting]

0 = no details obtained: not answered: insufficient answer
1 = married
2 = single
3 = divorced
4 = widowed
5 = separated
6 = cohabiting

To allow for valid analysis the following variables were combined
'married' with 'cohabiting'
'divorced' with 'widowed' & 'separated'

(3) **Social Class of husband**

0 = no details obtained: refused/not answered: insufficient answer
1 = Social Class 1
2 = Social Class 2
3 = Social Class 3N
4 = Social Class 3M
5 = Social Class 4
6 = Social Class 5
7 = unemployed
8 = retired: invalid
9 = not relevant (not currently married)

To allow for valid analysis the following variables were combined
'Social class 1' with 'social class 2'
'Social class 4' with 'social class 5'

(4) **Social Class of interviewee**

0 = no details obtained: refused/not answered: insufficient answer
1 = Social Class 1
2 = Social Class 2
3 = Social Class 3N
4 = Social Class 3M
5 = Social Class 4
6 = Social Class 5
7 = not working
8 = retired: invalid

To allow for valid analysis the following variables were combined
'Social class 1' with 'social class 2'
'Social class 4' with 'social class 5'

(5) **Housing Tenure**

0 = no details obtained: not answered: insufficient answer
1 = council housing
2 = private sector

(6a) **Age of school leaving**

0 = no details obtained: not answered: insufficient answer
1 = 13 or under
2 = 14
3 = 15
4 = 16
5 = 17
6 = 18
7 = 18+
8 = never attended school
9 = can't remember

To allow for valid analysis the following variables were combined
'Never attended school' with '13 or under'
'14' with '15'
'18 with 18+'

(6b) **Studying since leaving school: further education**

0 = no details obtained: not answered: insufficient answer
1 = yes - academic
2 = yes - non academic
3 = no
4 = yes unspecified: unable to determine

(7) **Children** - 0 to 9

8 = eight or more
9 = not asked

To allow for valid analysis 5 or more children were combined

(8) **GP Status**

0 = no details obtained: not answered: insufficient answer
1 = female GP; single-handed:
2 = female GP; group female practice
3 = male GP; single-handed
4 = male GP; group practice - males only
5 = male GP; group practice with female GP
6 = GP sex unknown; group practice
7 = not registered with GP: changing practices

To allow for valid analysis the following variables were combined
'female GP; single-handed' with female GP; group female practice' and ' male GP; group practice with female GP' to form 'access to a female GP'
'male GP; single-handed' with ' male GP; group practice - males only' to form 'no access to a female practitioner'

(9b) **"Do you ever see the woman GP?"**

0 = no details obtained: not answered: insufficient answer
1 = always
2 = usually
3 = sometimes
4 = rarely
5 = never
6 = not relevant - registered in all male practice
7 = not relevant - registered in all female practice
8 = not relevant - changing practices
9 = not registered with GP

To allow for valid analysis the following variables were combined
'always' with 'usually'
'rarely' with 'never'

(9c) **"Would you prefer to see the women GP?"**

0 = no details obtained: not answered: insufficient answer
1 = always
2 = sometimes
3 = never
4 = depends on problem
5 = don't know
6 = don't mind

(10) **"How many years have you been registered with your GP?"**

0 = no details obtained: not answered
1 = 1 year or less
2 = 1 to 2 years
3 = etc
97 = unknown
98 = changing practices
99 = not registered

(11) **Frequency with which GP is seen**

0 = no details obtained: not answered: insufficient answer
1 = every week
2 = every 2 weeks
3 = every month
4 = every 2 months
5 = every 3 months
6 = every 6 months
7 = every 9 months
8 = once a year
9 = less than once a year

(12) **Related illnesses: operations**

0 = no details obtained: not answered: insufficient answer
1 = hysterectomy - total
2 = hysterectomy - subtotal (cervix intact)
3 = cervical cancer: abnormalities
4 = breast cancer: ovarian cancer
5 = none: unrelated operation
6 = hysterectomy for ca cervix

Age at hysterectomy

Age at procedure recorded.
99 = not relevant; has not had hysterectomy

SECTION 3: KNOWLEDGE RELATING TO CANCER OF THE CERVIX

(13) **"Can you tell me anything about cancer of the cervix?"**

0 = no details obtained: not answered: insufficient answer
1 = not really: a little: not a great deal: not much: haven't thought about it
2 = no: don't want to know: don't want to think about it
3 = yes; smears are for detection
4 = yes; smears are for prevention
5 = yes; related to attendance for smears - I go for a cervical smear: I should go for a cervical smear: I don't go for a cervical smear: women should go for smear tests: early diagnosis through smears: women should be screened
6 = yes; seen it on TV
7 = yes; read about it
8 = yes; discussed it with others
9 = yes; known someone (friend or relative) with the disease

10 = yes; specific definition of ca cervix - cancer of the neck of the womb: abnormal cells which can turn into cancer
11 = yes; vague definition of ca cervix - cancer of the womb: cancer of the insides: it's cancer: a growth: women's cancer
12 = yes; knowledge of symptoms - abnormal/irregular bleeding
13 = yes; knowledge of causes - multiple sexual partners: numerous and early pregnancies: sexually transmitted: sex related: wart virus: genital warts
14 = yes; needs to be caught: treated early: will spread if not treated:
15 = knowledge of treatment: biopsy: hysterectomy: colposcopy: laser
16 = yes; erroneous knowledge - discharge is a sign: cancer of the blood: causes womb to fall out: travels up the CNS: D & C: infection: most common womens' cancer
17 = fear mentioned - something to be frightened of: can kill: is fatal: will spread: very serious
18 = more likely if you're on the pill: related to pill
19 = more common in younger women
20 = yes; unspecified: wouldn't elaborate
99 = no further details obtained

To allow for valid analysis the following variables were combined
'not really', with 'don't want to know' & 'wouldn't elaborate' into 'no'
'heard about it' with 'read about it' and 'discussed it' into 'general knowledge'
'smears are for detection' with 'smears are for prevention' into 'smears mentioned'
'knowledge of symptoms' with 'knowledge of causes' and 'knowledge of treatment' into 'correct knowledge'
'more likely if you're on the pill' with 'more common in younger women' into 'age-related - erroneous'

(13a) **"Have you heard of the cervix?"**
0 = no details obtained: not answered: insufficient answer
1 = correct definition - inside vagina: entrance to womb: beginning of womb: neck of womb
2 = vague euphemistic definition - down below: nether regions
3 = incorrect answer
4 = no: no idea (answered 'yes' to above then 'no' to prompting)
5 = yes - unspecified: wouldn't elaborate
6 = wouldn't answer
9 = not asked

(13b) **"Have you heard of the neck of the womb?"**
0 = no details obtained: not answered: insufficient answer
1 = correct definition - inside vagina: entrance to womb: beginning of womb: neck of womb
2 = vague euphemistic definition - down below: nether regions
3 = incorrect answer
4 = no: no idea (answered 'yes' to above then 'no' to prompting)
5 = yes - unspecified: wouldn't elaborate
6 = wouldn't answer
9 = not asked

SECTION 4: PREVENTION & CURE OF CANCER OF THE CERVIX

(14) **"Do you think that it is possible to prevent getting cancer of the cervix?"**
0 = no details obtained: not answered: insufficient answer
1 = no; not preventable: don't think so: if its there its there: runs in families: it's in your system: not really: don't think so

2 = don't know: never thought about it: not sure: no idea: difficult to say: hope so: wouldn't like to say: suppose so
3 = to frightened to think about it
4 = yes; no further details obtained: reason unspecified
5 = yes correct; sex related - avoid early sex: multiple partners: early pregnancies: remain celibate
6 = yes; good hygiene: circumcision
7 = yes correct; not smoking
8 = yes correct; job related: dirty jobs
9 = yes correct; early detection: cervical smears: early diagnosis: screening: check ups: prevent by catching it before it turns into cancer
10 = yes correct; contraceptive methods - not using the pill: using barrier methods
11 = yes incorrect; sex related - stop having sex: douching: using pessaries: too much sex: rough sex: don't use coil - irritates cervix: tampons cause it: don't use barrier methods
12 = yes incorrect; dietary related - eat plain & simple foods: don't drink: healthy living
13 = disease of older age: comes with age
14 = clean living: orderly life: don't mess around
99 = no further details obtained

To allow for valid analysis the following variables were combined
'don't know' with 'too frightened to think about it'
'not preventable' with 'disease of older age'
'sex related' with 'clean living' & 'dietary' into 'yes - incorrect'
'good hygiene' with 'job related'

(15) **"Do you think that cancer of the cervix can be cured?"**
0 = no details obtained: not answered: insufficient answer
1 = not curable - can't ever be cured: treatment is ineffective: have known people die of it: it always comes back
2 = don't think so: don't know
3 = sometimes - occasionally: some are cured: possibly: depends on seriousness: depends on individual: depends on lifestyle
4 = if caught early enough: only if caught in time
5 = yes; unspecified reason
6 = yes; known someone who has been 'cured'
7 = yes; easy to cure: once of the easiest cancers to cure: cured by surgery: hysterectomy: laser: cone biopsy: colposcopy
8 = told that its curable: the experts say so: have read that it is
9 = erroneous answer - eg cured by examinations: cervical smears

SECTION 5: KNOWLEDGE ABOUT CERVICAL SMEARS

(16a) **"Have you heard of the cervical smear test?"**
0 = no details obtained: not answered: insufficient answer
1 = yes
2 = no
3 = not asked

(16b) **"Have you heard of the PAP test?"**
0 = no details obtained: not answered: insufficient answer
1 = yes
2 = no
3 = not asked

(16c) **"Have you heard of the cytotest?"**

0 = no details obtained: not answered: insufficient answer
1 = yes
2 = no
3 = not asked

(16d) **"Have you heard of the cervical test?"**
0 = no details obtained: not answered: insufficient answer
1 = yes
2 = no
3 = not asked

"Can you tell me what these tests are for?"
0 = no details obtained: not answered: insufficient answer
1 = no
2 = don't know
3 = yes; incorrect - biopsy: scrape: D&C: looking for infection/ microbes/ white blood cells/bacteria
4 = yes; cancer mentioned - to detect cancer: finds cancer: looks for cancer: cancer test
5 = yes; to prevent cancer
6 = precancerous condition - abnormal cells that can turn into cancer: too see if anything is wrong before cancer develops: also finds infections: erosions or other diseases
7 = definition of procedure
9 = not asked

SECTION 6: SCREENING HISTORY

(17a) **"How many cervical smear tests have you had?"**
0 = not relevant - never had smear
1 = 1
2 = 2
3 = 3
4 = 4
5 = 5 or more
6 = not known
9 = not asked

(17b) **"How did you first know about the test?"**

0 = not relevant - never had smear
1 = asked for smear - couldn't remember why
2 = advertising - posters: leaflets: TV: newspapers: women's magazines
3 = encouraged by others - peer or family pressure: heresay
4 = thought it was a good idea
5 = routine; FPC
6 = routine; Well Woman Clinic
7 = routine; related to pregnancy - ante or post natal
8 = routine; related to surgery - D & C: abortion: hysterectomy: fertility investigations: gynæ checkup
9 = routine; symptomatic
10 = organized at place of work
11 = specialist recommendation - GP: doctor: HV: nurse: gynæcologist
12 = can't remember: don't know
13 = other
14 = mobile caravan
15 = friend or relative had died of ca cervix
16 = letter of invitation
17 = our leaflet
99 = not asked

To allow for valid analysis the following variables were combined
'asked for smear' & 'thought it was a good idea' into 'common sense'
'can't remember' with 'mobile caravan' into 'other'
'encouraged by others' with 'knew someone' into 'personal contact'

(17c) **"Where did you have it done?"**

0 = not relevant - never had smear
1 = FPC
2 = Well Woman Clinic
3 = Gynæ OPD: hospital
4 = GP's surgery
5 = mobile caravan
6 = can't remember: too long ago
7 = at work
8 = other
9 = not asked

(17d) **What made you have it done?"**

0 = not relevant - never had smear
1 = asked for smear - couldn't remember why
2 = advertising - posters: leaflets: TV: newspapers: women's magazines
3 = encouraged by others - peer or family pressure: heresay
4 = thought it was a good idea: common sense: looking after yourself: prevention is better than cure
5 = routine; FPC
6 = routine; Well Woman Clinic
7 = routine; related to pregnancy - ante or post natal
8 = routine; related to surgery - D & C: abortion: hysterectomy: fertility investigations: gynæ checkup
9 = routine; symptomatic
10 = organized at place of work
11 = GP: doctor recommended it
12 = can't remember: don't know
13 = curiosity: something to do
14 = friend or relative had died of ca cervix
15 = fear as incentive
16 = letter of invitation
17 = BUPA or private medical
18 = duty to others: responsibility to family
99 = not asked

To allow for valid analysis the following variables were combined
'asked for smear' & 'thought it was a good idea' into 'common sense'
'can't remember' with 'curiosity', 'fear as incentive', 'letter of invitation',
'BUPA' & 'duty to others' into 'other'
'encouraged by others' with 'knew someone' into 'personal contact'

(17e) **"How did you find the test?"**

0 = not relevant - never had smear
1 = O.K. - nothing to it: didn't feel anything: quite easy: quite comfortable: didn't know that I'd had it done: not unpleasant: don't know what all the fuss is about: not too bad
2 = embarrassing: apprehensive: nervous
3 = frightening: didn't know what to expect
4 = uncomfortable: not nice: some discomfort
5 = painful: hurt: unpleasant: I wouldn't go again: horrible: hated it
6 = can't remember: too long ago: anaesthetized
7 = vague - don't know: much as I expected: yes
8 = gave detail of result
9 = not asked: refused to answer

(17f) **"Were you given the result of your last test?"**

0 = not relevant - never had smear
1 = yes
2 = no
3 = can't remember: too long ago
4 = had to find out: phone up
5 = no news is good news
6 = specimen lost
7 = refused to answer
9 = not asked

(17g) **"How long ago was your last test?"**

0 = not relevant - never had smear
1 = under 1 year
2 = 1-2 years
3 = 3-4 years
4 = 5-10 years
5 = over 10 years
6 = not relevant - hysterectomy
7 = don't know:
8 = refused to answer
9 = not asked

Classification of attendance for cervical cytology

0 = no details obtained: not answered: insufficient answer
1 = regular attender
2 = lapsed attender
3 = new recruit
4 = never attender
5 = hysterectomy
6 = irregular attender
7 = unclassifiable
8 = never been sexually active
9 = not asked

(17h) **If LAPSED ATTENDER**
"Are there any reasons why you have not had a cervical smear test recently?"

0 = no details obtained: not answered: insufficient answer
1 = disliked procedure: painful: uncomfortable: Dr rude: reluctant to approach GP
2 = laziness: can't be bothered: don't have the time: too many other problems
3 = forgot: don't think about it: just didn't: no reason: one of those things: not interested: don't want one
4 = didn't know where to go: too old for FPC: GP doesn't do them: moved areas
5 = time factor - too busy: no time
6 = incorrect - no longer necessary: no longer sexually active: too old
7 = misinformation - told could not have one: told no longer necessary: was not recalled
8 = health - previously OK: healthy: ill health: I'm alright
9 = scared: too embarrassed: shy: don't like male doctors: only male doctors in practice.

To allow for valid analysis the following variables were combined
'disliked procedure' with 'scared: embarrassed'
'didn't know where to go' with 'time factor' & 'health' into 'excuses'
'incorrect' with 'misinformation'

(17i) **If LAPSED ATTENDER**
"Do you think that you ought to have a cervical smear?"
0 = no details obtained: not answered: insufficient answer
1 = yes - suppose I should: would be advisable: been thinking about it: wouldn't mind
2 = maybe: perhaps
3 = don't know: up to each individual: depends on person
4 = no: don't want one
5 = haven't thought about it: not bothered
6 = not necessary - correct; never been sexually active
7 = not necessary - incorrect; no longer sexually active: too old
8 = excuses - don't have the time: too busy: too lazy: can't be bothered: too much on my mind
9 = health - previously OK: healthy: ill health

To allow for valid analysis the following variables were combined
'maybe: perhaps' with 'don't know' into 'uncertain'
'haven't though about it' with 'not necessary - incorrect' with 'excuses'

(17j) **If NEVER ATTENDER**
"Are there any reasons why you have never had a cervical smear test?"
0 = no details obtained: not answered: insufficient answer
1 = fear of cancer: fear: fear of anything medical: don't want to know: scared
2 = laziness: can't be bothered: don't have the time: too many other problems: keep putting it off
3 = embarrassed: reluctant to approach GP: don't want to be examined by a male doctor: seldom go to GP
4 = never been recommended: GP's never discussed it
5 = didn't know where to go: too old for FPC: GP doesn't do them: didn't know about them
6 = incorrect - no longer necessary: no longer sexually active: too old
7 = misinformation - told could not have one: told no longer necessary: was not called: never been promiscuous
8 = health - previously OK: healthy: ill health: I'm alright
9 = no - don't want one: no reason: never thought about it: don't like the idea

To allow for valid analysis the following variables were combined
'fear' with 'embarrassed'
'laziness', 'never been recommended', 'don't know where to go', 'haven't though about it' and 'irrelevant' with 'incorrect' with 'excuses'

(17k) **If NEVER ATTENDER**
"Do you think that you ought to have one done?"
0 = no details obtained: not answered: insufficient answer
1 = yes: suppose so
2 = maybe: perhaps
3 = don't know: up to each individual: never thought about it
4 = no: don't want one: prefer not to know: not really: leave well alone
5 = haven't thought about it: not bothered
6 = not necessary - correct eg never been sexually active
7 = not necessary - incorrect eg no longer sexually active: too old: never been promiscuous: haven't got any problems: no symptoms
8 = excuses - don't have the time: too busy: too lazy: can't be bothered: too much on my mind: no faith in doctors: don't trust my GP

9 = not asked
To allow for valid analysis the following variables were combined
'maybe: perhaps' with 'don't know' into 'uncertain'

'haven't though about it' with 'not necessary - incorrect' with 'excuses'

(17l) **ALL WOMEN**
"How often do you think a cervical smear ought to have one done?"
0 = no details obtained: not answered: insufficient answer: regularly
1 = as often as possible
2 = depends on age: OC use: number of partners: age at first intercourse: family history: doctor's advice
3 = 6 months or less
4 = annually
5 = every 2 years
6 = every 3 years
7 = every 5 years
8 = don't know: never thought about it: not sure
9 = they say 5 years but I don't believe it: 5 years is too long: should be more often than 5 years

SECTION 7: EFFECT OF ADVERTISING

(18) **"Have you ever seen a poster or leaflet suggesting that you have a cervical smear?"**
0 = no details obtained: not answered: insufficient answer
1 = yes
2 = no
3 = don't know

(18a) **"Can you remember where you saw it?"**
0 = no details obtained: not answered: insufficient answer
1 = GP's surgery: hospital
2 = local shops: local area: post office
3 = FPC: Well Woman clinic
4 = work
5 = at housing office: DHSS office: library: CAB: community centre
6 = posted through door
7 = came with/seen in press
8 = numerous places
9 = no: can't remember: uncertain

To allow for valid analysis the following variables were combined
'local shops' with 'work', 'at housing office: DHSS office' and 'numerous places' to form 'local area'
'posted through door' with 'came with press'

(18b) **"Can you remember what it said?"**
0 = no details obtained: not answered: insufficient answer
1 = no: can't remember: didn't read it
2 = yes; who should have smear: women over 35 should be screened: advising women to go
3 = yes; what is done: where to go
4 = yes; number of deaths per year
5 = yes; embarrassment
6 = too embarrassed too read poster: leaflet
7 = warning about cancer: mentioned cancer
8 = message other than ours
9 = no further details obtained

To allow for valid analysis the following variables were combined
'no' with 'too embarrassed to read poster'
'who should have smear' with 'what is done: where to go'
'number of deaths per year', 'mentioned embarrassment' and 'warning about cancer' into 'yes - correct'

(18c) **"Can you remember what it looked like?"**

0 = no details obtained: not answered: insufficient answer
1 = no can't remember: uncertain: didn't read it
2 = poster: leaflet was coloured
3 = poster: leaflet was black and white
4 = other description of poster: leaflet

(18d) **"Whose advertising material?"**

0 = no details obtained: not answered: insufficient answer
1 = our poster: leaflet - message correctly remembered
2 = our poster: leaflet - message incorrectly remembered: not remembered: not read
3 = someone else's leaflet/poster
4 = unable to determine
5 = produced our leaflet
6 = recognised our leaflet when shown (women who claimed never to have seen leaflet only)

SECTION 8: FRIEND'S REACTION TO CERVICAL CYTOLOGY

(19) **"Can you think of anything that would persuade your friends to have a cervical smear?"**

0 = no details obtained: not answered: insufficient answer: have no friends: wouldn't discuss it with friends
1 = no; reasons unspecified
2 = no; don't believe in it
3 = no; afraid: fear as deterrent
4 = yes; peer pressure: I would persuade her: women talking: personal contact: contact with someone whose had the test: heresay
5 = yes; well being: peace of mind: common sense: taking care of yourself
6 = yes; prevention of cancer: making sure that nothing is wrong: early detection
7 = yes; specialist recommendation - GP: letter from GP: nurse: health visitor
8 = yes; symptomatic
9 = yes; mobile caravan
10 = yes; raise levels of awareness - publicity: information: given facts: education: TV: advertising
11 = yes; fear as incentive: known someone with: died of the disease: shock treatment: frighten them
12 = don't know - no idea: up to the individual concerned: shouldn't need to be persuaded: they should go: can't persuade some people
13 = reward: pay women for going
14 = female practitioners - women doctors are more sympathetic: men don't understand: male GPs are too rough
15 = knowledge that disease is curable
16 = ease of access: services need to be close
99 = no further details obtained

To allow for valid analysis the following variables were combined
'no; reasons unspecified' with 'no; don't believe in it' into 'no - general'
'mobile caravan' with 'reward: pay women for going', 'female practitioners' and 'ease of access' into 'other'
'well being' with 'prevention of cancer' into 'common sense'
'raise levels of awareness' with 'knowledge that disease is curable' into 'increased knowledge'

SECTION 9: OWN REACTION TO CERVICAL CYTOLOGY

(20) **"If you had never had a cervical smear what would persuade you to have one done?"**

0 = no details obtained: not answered: insufficient answer
1 = no; reasons unspecified
2 = no; don't believe in it
3 = no; afraid: fear as deterrent
4 = yes; peer pressure: family pressure from husband/sister/children: I would persuade her: women talking: personal contact: contact with someone whose had the test: heresay
5 = yes; well being: peace of mind: common sense: taking care of yourself
6 = yes; prevention of cancer: making sure that nothing is wrong: early detection: prevention is better than cure
7 = yes; specialist recommendation - GP: letter from GP: nurse: health visitor: interviews such as this
8 = yes; symptomatic
9 = yes; mobile caravan
10 = yes; raise levels of awareness - publicity: information: given facts: education: TV: advertising
11 = yes; fear as incentive: known someone with/died of the disease: shock treatment: frighten them: worry: if I thought that I was at risk
12 = excuses - don't have the time: too busy: too lazy: can't be bothered: too many other problems: health - fit or unfit
13 = don't want to think about it: don't know - no idea: never thought about it: what I don't know won't harm me
14 = ease of access: services need to be close
15 = female practitioners - women doctors are more sympathetic: men don't understand: male GPs are too rough
16 = nothing: not interested: don't want to know
17 = age related - if I was the right age: if I was younger
18 = curiosity
19 = if I knew someone with the disease: thinking what cancer can do to you
20 = previous misinformation: wants to have smear
21 = responsibility to others: family
22 = knowledge that disease is curable: not fatal
23 = our leaflet
99 = no further details obtained

To allow for valid analysis the following variables were combined
'no; reasons unspecified', 'no; don't believe in it' with 'nothing'
'publicity' with 'knowledge that disease is curable'
'excuses' with 'if I was the right age'
'mobile caravan' with 'curiosity' , 'reward: pay women for going',
'female practitioners', 'previous misinformation', 'responsibility to other',
'our leaflet' and 'ease of access' into 'other'

SECTION 10: SCREENING PREFERENCES

(21) **"Where would you prefer to have a smear done?"**

0 = no details obtained: not answered: insufficient answer
1 = GPs surgery
2 = clinic
3 = don't know
4 = don't mind
5 = wouldn't have one
6 = if woman practitioner, don't mind where
7 = other

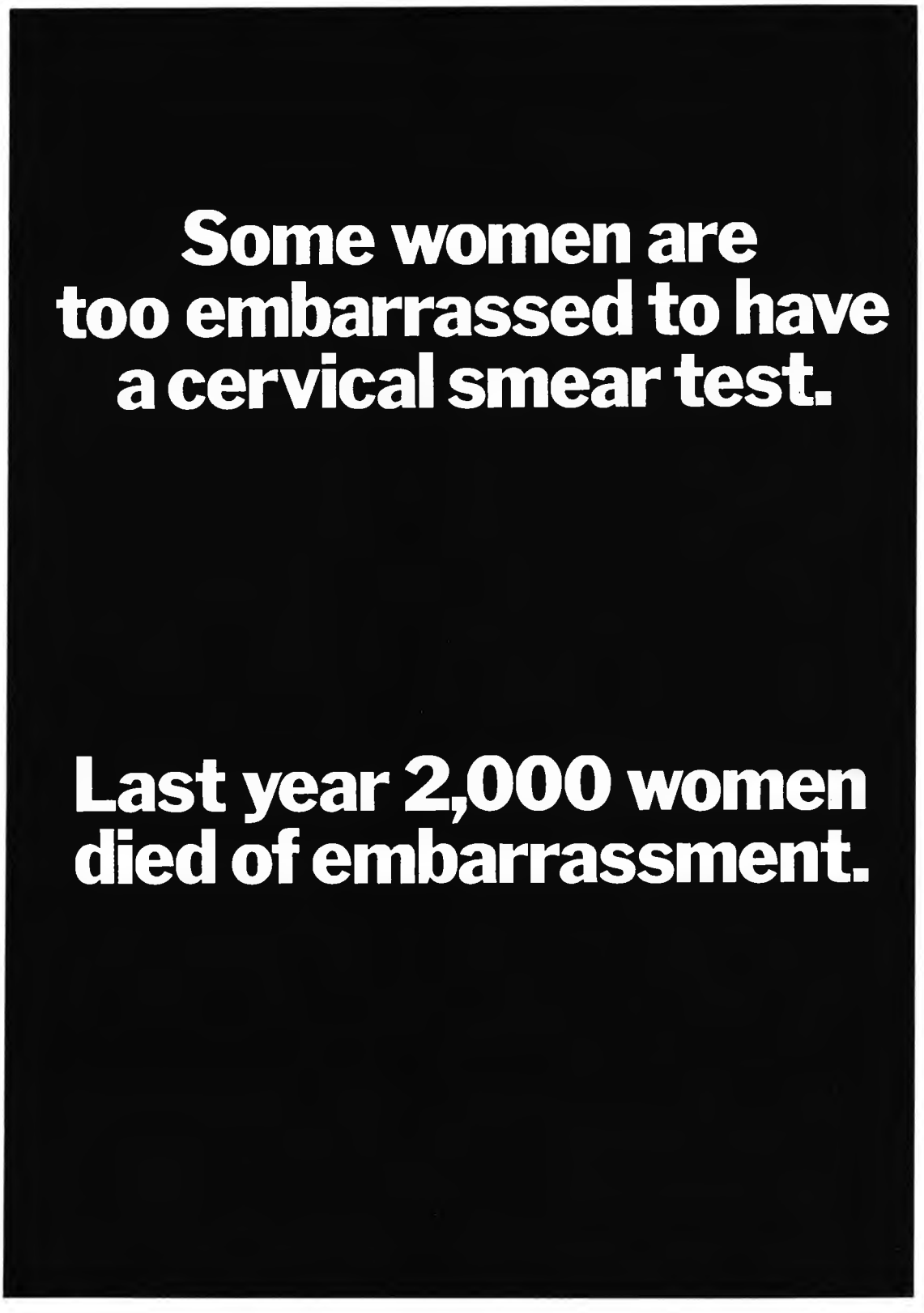
(22) **"Would you prefer a woman to take the smear?"**

0 = no details obtained: not answered: insufficient answer
1 = don't know
2 = don't mind
3 = wouldn't have one

(23) **"Do you know where your nearest smear clinic is?"**

0 = no details obtained: not answered: insufficient answer
1 = yes
2 = no
3 = no need to know (hysterectomy)
4 = don't want to know
5 = goes to GP: GPs surgery
6 = goes privately

APPENDIX G
POSTER & LEAFLET USED IN ADVERTISING STUDY



Cancer of the neck of the womb is a completely preventable disease.

If you have a cervical smear every five years your doctor can spot abnormal cells long before they turn into cancer.

And long before you feel any symptoms.

For most women the test is just a precaution. Even if there is something wrong the abnormal cells can simply be removed.

You won't even have to go into hospital.

But if a cancer is allowed to develop you could die.

The vast majority of the women who are killed by cervical cancer are over 40.

So if you are in your late thirties or older and are not already having regular smears you should start immediately.

A cervical smear is a quick, painless and safe test.

Cervical cancer is a slow, painful way to die.

Which would you rather have?

SOUTH WEST THAMES
REGIONAL CANCER ORGANISATION

Sponsored by the Cancer Research Campaign

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