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## **Compassion satisfaction and fatigue: An investigation into levels being reported by radiotherapy students.**

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**Conflicts:** None

### **Abstract**

**Introduction:** Studies have investigated the prevalence of compassion satisfaction and compassion fatigue in various healthcare professions. However, the majority of evidence is linked to the nursing profession and little is known about paramedical professions such as radiography and even less is known about its prevalence in students. The purpose of this study was to describe the levels of compassion satisfaction and compassion fatigue in the student population and how they varied in time. **Methods:** Students undertaking radiotherapy training at the researcher's host sites were surveyed using the Professional Quality of Life questionnaire at the end of each final clinical block in each year of their training. **Results & Conclusion:** During the three years of training compassion satisfaction falls and burnout increases in the student population, although the change is not significant. Secondary traumatic stress increases significantly during the 3 years of training,  $F=5.725$ ,  $p=0.005$ . Considerable variation also exists in the three scores dependent on the student's clinical training site. Relationships are also observed between some personality traits, particularly conscientiousness and neuroticism and compassion scores.

## **Introduction**

Radiotherapy is considered a “caring profession”, with students being expected to demonstrate compassion and empathy towards patients. Heightened compassion and empathy is essential in order to provide excellent patient care<sup>1</sup> which are needed alongside the technical aspects of the profession. Often this caring and working with patients is cited by students as one of the main reasons they choose the radiography profession<sup>2,3</sup>.

Compassion satisfaction (CS) encompasses the positive aspects derived from caring, such as altruism, satisfaction and success. Yet, whilst it is possible to derive pleasure from providing care it must also be acknowledged that working in a caring environment can also potentially impact negatively on the healthcare professional. This negative aspect derived from caring was first formally defined in 1995 by Dr Figley, and gave rise to the concept of compassion fatigue (CF). CF is unique to caring professions and is experienced as a result of helping and caring for others which has been shown to compromise quality of care that is given<sup>4,5</sup>. CF occurs as a result of the physical and emotional impact of caring in often stressful situations and is often referred to as the “cost of caring” and can negatively affect a healthcare worker’s quality of life and also compromises their ability to care for the patient<sup>6</sup>. Although this is the most commonly held definition of CF, McHolm<sup>7</sup> differentiates between two types of CF that may arise in staff. Compassion fatigue level 1 (CF-1) which arises when someone closely identifies with the patient and absorbs their trauma or pain, and CF-2 a worker who repeatedly re-experiences the patients traumatic events as described/witnessed as well as closely identifying with the patient.

CF can be broken down into two further constructs, secondary traumatic stress (STS) and burnout (BO)<sup>8</sup>. STS is a negative feeling that arises from being vicariously traumatised, the effects of which may be the same as if a person had experienced the event themselves and may include imagery distress and functional impairment. Burnout (BO) is linked to work related chronic stress and tends to develop gradually resulting in apathy and disinterest in work. Burnout is widely believed to have three dimensions, emotional exhaustion, depersonalisation and reduced personal accomplishment<sup>9</sup>.

The prevalence of CF has been studied in many different health professionals and has a tendency to be seen more widely professions who repeatedly witness and care for patients after trauma. This prevalence tends to be especially true for inexperienced professionals<sup>10</sup> as they may not have developed coping mechanisms of experienced staff or be aware of the support

mechanisms that are in place. The impact of CF may cause stress-related symptoms and dissatisfaction with their job within caregivers, which in turn may lead to an increase in job turnover within the healthcare system<sup>11</sup>. This link between CF and staff turnover has also been noted by other studies, Sung<sup>12</sup> stating that for Korean nurses CF accounted for approximately 30% of the variance for staff turnover. Because of these reasons interest in professional quality of life is a growing topic of interest in healthcare. A recent review<sup>13</sup> of 42 papers on CF in health related workers including nurses, emergency workers, physicians, midwives and students undertaken in the 10 years up to 2015 concluded that CF is a prevalent concern across a wide variety of clinical settings affecting not only the individual but also their interactions with patients. Stamm<sup>8</sup> identified three distinct factors that might impinge on professional quality of life; work environment, client environment and person environment. For example, a supportive work environment might positively affect an individual's level of CS, and this in turn might be affected by other factors such as personality and gender and the type of work being undertaken. Hunsaker<sup>14</sup> found low levels of managerial support for emergency department nurses was a significant factor in determining CF. Interventions are now being implemented in professions such as nursing, for example supportive counselling and helping staff to develop their own positive self-care strategies<sup>15,16</sup>.

The aim of this study was to establish the level of CS, STS and BO in student therapeutic radiographers and assess the association of the factors with time and training site.

## **Method**

This study was reviewed and approved by City, University of London's School of Health Sciences ethical committee.

Data were collected over a 2-year period between 2015 and 2016 by link lecturers visiting students in their clinical departments. Data collection took part during a fixed week in their final clinical period of the year, this was at the end of a long period in the clinical department during which there were no academic or clinical deadlines. During this two-year period, we had approximately 80 students each year attending the programme, giving an overall response rate of approximately 54% (86 returns). The main reasons for missing data were students being on their recreational day during the link lecturer's visit and students being rotated to placements at non-recurrent clinical sites during this time. Both these factors could classify the missing data as "missing completely at random" meaning that the missing observations are a random

subset of all observations<sup>17</sup> and as such it can be assumed that they will have similar distributions to the observed variables.

Analysis was undertaken using IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp; statistical significance was set at  $p \leq 0.05$ .

### **Instruments**

The questionnaire consisted of three sections; (i) demographic section, (ii) the Big Five Inventory (BFI-10)<sup>18</sup> that contains ten items on personality and gives details about five components of personality, Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience, (see Table 1), (iii) professional quality of life. In order to establish the levels of CS, STS and BO the Professional Quality of Life (ProQOL) survey instrument developed by Stamm<sup>8</sup> was utilised. This instrument contains 30 items in order to generate the three constructs, CS, CF and BO. Each construct is unique and cannot be combined and is derived from ten questions having a minimum score of 10 and a maximum score of 50. Scores for each construct can be classed into one of three groups for ease of interpretation; scores of 22 and below are rated as “low”, scores between 23 and 41 “average”, and scores of 42 or more “high”.

### **Results and Discussion**

Most respondents were Asian females and the average age of the sample was 22 years of age, range 18-50 years. These figures relate to the data, rather than the population as some students were included in the data analysis twice.

Figure 1 shows that CS slowly decreased year on year during the three years of training, although the difference from year 1 to year 3 (0.39) was very small and the change was not significant,  $F=0.175$ ,  $p=0.84$ . Both BO and STS showed an increase in score as training progresses, BO by a score of 1.87 ( $F=1.727$ ,  $p=0.184$ ) and STS by a total of 5.79 ( $F=5.725$ ,  $p=0.005$ ). The biggest change in scores occurred between years 2 and 3.

The pattern of change was the same for males and females for both STS and BO, but for CS females showed a mean increase in score of 1.9 whereas males showed a lowering of CS by 0.94. The levels of compassion satisfaction reported by third years students was slightly higher than that reported by Kolthoff<sup>19</sup> on inexperienced nurses (37.6), BO and STS scores were lower

(31.6, 28.7). The pattern of change shown over time is also reflected in other work on qualified staff, Kolthoff<sup>17</sup> reporting experienced nurses having lower CS, higher BO, and STS scores than inexperienced nurses. Yu<sup>20</sup> reported scores on qualified oncology nurses and again the CS scores being reported by student radiographers were higher than that being reported by qualified nurses (31.81) however the CF scores being reported by student radiographers were also higher by the end of training than the oncology nurses, (21.39 and 21.14). Although the change in BO during the training period was not significant its increase might be significant as a primary difference between BO and CF is that burnout typically demonstrates a gradual onset while CF may suddenly happen<sup>15</sup>.

The rating of CS was as expected seeing Figure 1 being relatively consistent over the three years with 40% of students having a high CS score compared to 31% in year 1, so despite the average score in year 3 falling, the percentage of students having a high CS score increased. No student reported high levels of BO, 52% of students reporting average levels of BO in year 3 compared to 50% in year 1. Again reflecting the change seen in Figure 1 the biggest change occurred in STS. No one reported high levels of STS, but the numbers having an average STS score rose from 18.8% in year 1 (81.2% reporting low levels) to 48% in year 3 (52% reporting low levels).

A multilinear model confirmed the interaction between the training point and STS, but all other factors age, ethnicity, marital status and site had no effect on the three constructs being measured. When looking at the change in the CS, BO and STS on each site (Figure 2) there were major differences between the sites about the pattern of change. All sites showed an increase in STS whereas for three sites (A, D and E) there was also a reduction in CS. This inverse relationship between CS and both BO and STS has been noted in other publications and is to be expected, however, site C reported an increase in CS and an increase in STS which is unusual. Possible explanations for this might be the different patient workloads in the different hospitals. Some departments are busier than others possibly increasing exposure to stressful events, which might also affect a student's ability to deal with the experiences. Also, patient groups varied between sites which might have affected the results, the most extreme difference being that one of the sites specialised in children's cancers where staff and students not only have to deal with the patient but also the stress and support needed for the family. The difference in levels of burnout between sites to some degree reflected the findings of Probst's study<sup>21</sup> on qualified therapeutic radiographers that also observed marked variation in BO

experienced between some clinical sites. This may indicate that BO and STS cannot be assumed to be at base levels on qualification and levels may dependent on their training site and starting to change before the radiographers are even qualified.

Finally, the relationship between personality and CS, BO and STS was investigated (Table 2). Relationships were found between various personality traits and CS, BO and STS. Students who had higher levels of conscientiousness (were efficient and organised) tended to have higher compassion satisfaction levels than those that didn't whereas students who weren't conscientious and lacked direction, and had higher levels of neuroticism were more prone to BO. Finally, students who were more closed to new experiences and had higher levels of neuroticism (more sensitive and nervous) tended to show higher levels of STS.

The study has a number of limitations. The BFI-10 has established validity and reliability<sup>17</sup> however, personality is a complicated concept and having only ten questions gives only limited information about an individual's personality as the scale has diminished psychometric properties compared to larger instruments. The sample size is small and only representative of one education provider's students. Having a small sample size decreases the statistical power (*the likelihood that an effect will be detected when there is an effect to be detected*) of the tests and in this study is more important when looking at the hospital site data as the size in any one hospital site is further reduced increasing the loss of power even more. Limiting data collection to one education provider does mean that there is less variation within the sample as many experiences are common to the programme; it does however, mean that making inference to other sites is more problematical. Despite this the issue of CF in students may be of concern and further investigation is warranted. The study did not consider attrition, but further research into this area should also be considered as attrition within radiotherapy students is of concern to the profession. A survey by the Society and College of Radiographers in 2011<sup>22</sup> suggested that dissatisfaction with practice placements was the most commonly reported reason why students failed to complete their undergraduate programme. If we accept the premise that there is a relationship between staff turnover of healthcare staff and CF this might also be reasonable to propose the same relationship in students and link CF to attrition and therefore looking at CF during training and putting mechanisms in place during training might help reduce CF and hence attrition.

## **Conclusion**

The study identified a marked increase in STS in radiotherapy students over their three years of study along with a slight decline in CS and a small increase in BO. Students who were organised and were more secure and confident on clinical placement appeared to be better protected from BO issues whilst students who were less organised or lacked direction were more at risk of developing BO. Using the ProQOL instrument students at an increased risk of BO could be identified before or during clinical placements, for example through personal tutoring sessions. One possible way forward is to introduce mechanisms to help students cope with their work experiences and possibly target students at risk of developing STS and offer them extra support during their training. Finally there was marked variation between hospital sites on the change in the 3 constructs during the three years of training and qualifying students are entering the profession with quite varied levels of CS, CF and BO which largely appears to be dependent on their training site, however, more work needs to be done in this area before this can be stated conclusively.

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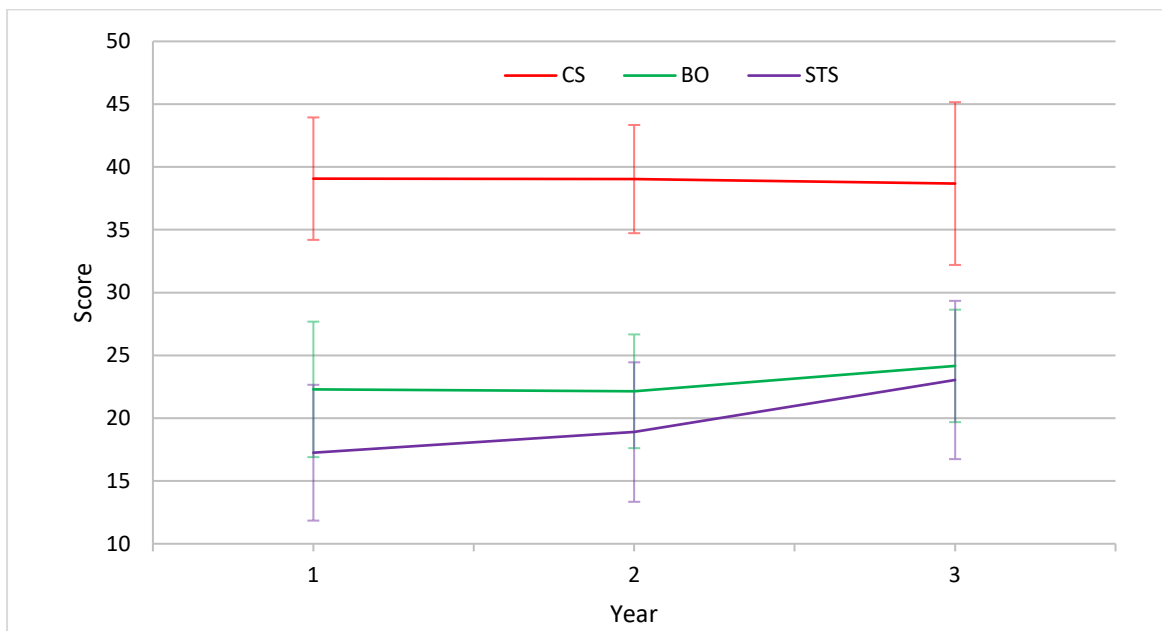
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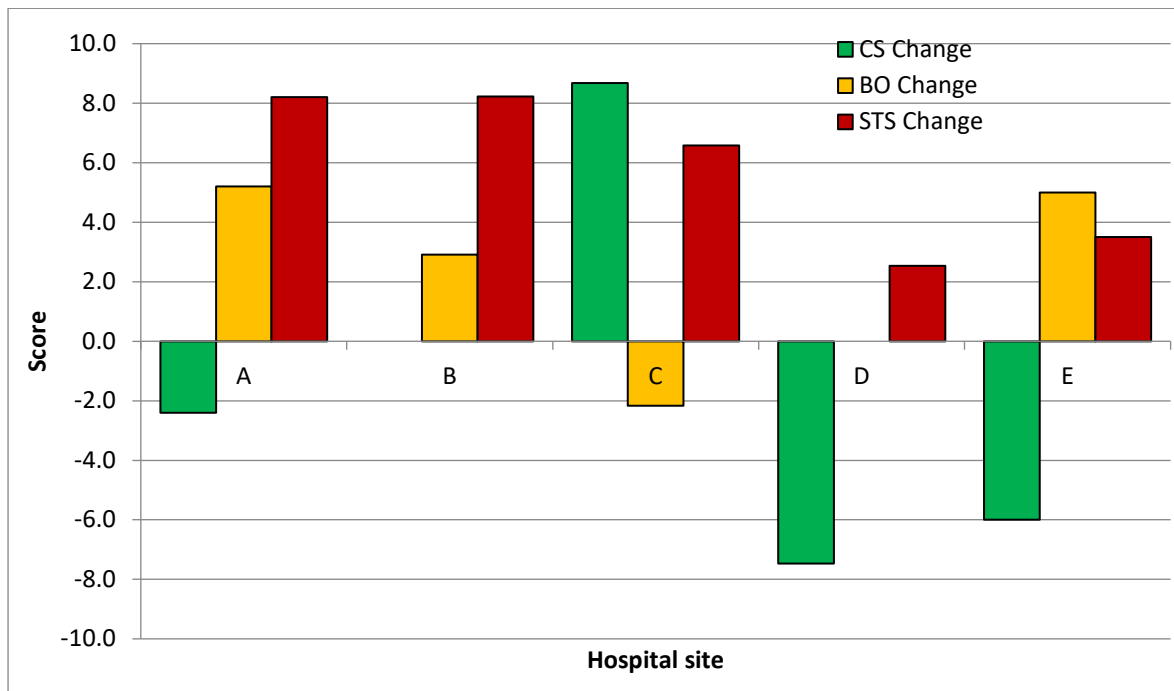
**Table 1. Big Five Personality factors**

Factor	High scorers	Low scorers
<b>Extroversion</b>	Talkative, active, affectionate	Loner, quiet, reserved
<b>Agreeableness</b>	Trusting, soft-hearted, good-natured	Suspicious, critical, irritable
<b>Conscientiousness</b>	Conscientious, hard-working, well organised	Negligent, lazy, disorganised
<b>Neuroticism</b>	Worried, self-conscious, emotional	Calm, even-tempered, unemotional
<b>Openness</b>	Imaginative, creative, curious	Down to earth, conventional, uncurious

**Figure 1. CS, BO and STS scores over time.**



**Figure 2. Change in construct score with training site**



**Table 2. Correlations between personality scores and ProQOL scores.**

	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
CS	-0.060	0.247*	0.090	0.053	-0.143
BO	0.009	-0.217*	0.033	-0.128	0.236*
STS	-0.227*	-0.228	0.045	-0.146	0.213*

\* = Significant at the 0.05 level.