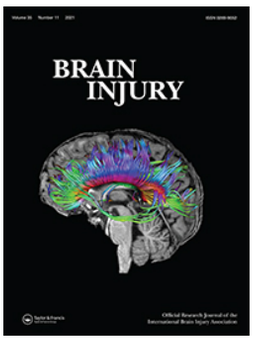

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Current practices and beliefs regarding supporting dating skills in rehabilitation for traumatic brain injury: a survey study

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ABSTRACT

Background: Relationships are important to quality of life after traumatic brain injury (TBI). However, there has been limited research into how to support dating skills or how professionals view this area.

Method: An online 52-item survey was developed and sent to professionals in the UK involved in rehabilitation after TBI. Recruitment was through professional networks, special interest groups and social media.

Results: 125 participants from a range of professions completed the survey. Many agreed that dating skills are important in rehabilitation (81.6%), but fewer (51.2%) reported engaging in this work. Psychologists, SLTs and OTs were identified as well placed to address dating skills. Case managers also appeared aware of this work. Participants reported using a range of activities to address dating skills, including managing disinhibited behavior and teaching interaction skills. Perceived barriers were both personal and professional, including lack of resources and feeling embarrassed.

Conclusion: This study has highlighted an awareness of the importance of dating in brain injury, but professionals face multiple barriers to supporting dating skills. It is possible to draw on recommendations from related areas, including rehabilitation for cognitive communication difficulties and sexual dysfunction with further research to specifically link these areas to dating skills.

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Dating; relationships; rehabilitation; communication; brain injury

Introduction

Intimate relationships are important to quality of life (QoL) and life satisfaction after Traumatic Brain Injury (TBI). Murphy et al. (1) showed that adults with TBI who were in an intimate relationship reported better QoL than those who were not. The need for intimacy has been rated by adults with TBI as one of their top three most important, unmet needs and the area in which they are least likely to be satisfied (2,3).

Previous research (e.g. 4, 5) has focused on sex and sexual issues, which does not adequately address the skills and behaviors needed for intimate relationships. For example, it has been argued that areas such as communication are key to intimate relationships, rather than purely sex (6,7). Consideration of psychosocial outcomes for people with TBI is important (8–10). In order to further improve these outcomes, it may be important to address relationships as a broader topic, rather than only addressing sexual issues.

Communication problems are common after TBI with incidence rates commonly reported as above 75% (11). These problems can significantly impact on social integration and quality of life after TBI (12). People with TBI are at risk of isolation and loneliness (8,13,14) and difficulties with social relationships for many years post-injury (15,16), suggesting that these difficulties may not resolve simply with time. Nuanced social and communication skills are required for intimate interactions, including when and how often to contact someone, interpreting subtle positive or negative cues in response to sexual advances or appraising when a date has been positive (17). These difficulties may link to the common, but often unmet desire to engage in typical, intimate interactions (18). Among other neuro-atypical populations difficulties with dating and intimate relationships have been linked to risks of abuse (19) and interventions can be targeted at reducing this risk (20). It is important to consider the needs and risks of the TBI population as well and what interventions may offer.

Previous research has focused on the impact of TBI on sexuality and marital relationships. There is an identified negative impact on the physiological and psychological elements of sexuality, including altered desire, altered self-perception, difficulties achieving or sustaining an erection or pain (21). The link between TBI and changes to sexuality is varied as it can also be impacted by mood and gender (21). There are also significant impacts on marriage. However, estimates of divorce and separation rates vary substantially from 15 to 78% (22). In marital relationships, TBI can lead to increased burdens in daily decision-making for the spouses (22), as well as emotional changes, ambiguity over roles and boundaries and break-down in communication (23). Although positive changes have also been reported, such as building a strong sense of commitment and valuing personalities that are more sociable and outgoing (22). Preliminary intervention studies to support marriage after TBI have shown some success on measures of relationship quality, dyadic adjustment, communication style and depression (24–26).

There appears to be far less attention on dating after TBI. Dating refers to two people meeting socially with the intention of developing an intimate or sexual relationship (27). This

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process usually involves particular expectations on each person's behavior (28). Although these expectations can change over time and between cultures (29). TBI can lead to many behavioral, cognitive and communication changes that negatively impact a person's ability to interact with potential dating partners and develop a dating relationship (30). This may include changes such as personality changes, associated with frontal lobe damage, including impulsiveness, lability and reductions in anger management, initiation or emotional reactivity (30). Changes to social cognition, such as reduced ability to infer speaker intent and a range of sensory or motor deficits that can also impair ability to successfully navigate these interactions (30). During a recent systematic literature review (31) the authors were only able to identify two studies exploring dating interventions for people with TBI (32,33). There were overlaps in the approaches taken in each intervention. They both considered interaction skills such as social skills and assertiveness, they both included dealing with rejection, and used behavioral approaches such as modeling, role-play and feedback. These overlaps may indicate a degree of consensus about what is important in interventions for dating skills. However, both studies (32,33) were poorly controlled case-studies with incomplete descriptions of the interventions. Therefore, drawing conclusions from these studies should be done cautiously.

The lack of research on dating after TBI may also be compounded by a reluctance among professionals to address topics linked to dating and relationships. These topics can be seen as difficult, complex, or requiring specialist knowledge (34). There can also be confusion over which clinicians should be addressing this area. Calloway et al. (35) argued that Occupational Therapists are well positioned to support the range of skills required to maintain social relationships. However, among a learning disability population, Harris and Brady (36) suggested that speech and language therapists should be involved due to the communication skills needed to establish relationships and to allow people to express their needs and feelings. The combination of complexity, lack of ownership and lack of research may all contribute to the lack of focus on dating in rehabilitation post-TBI (35,5,37).

There is a clear gap in the evidence regarding the development of skills for dating and engaging in relationships. This gap exists despite research that demonstrates people with TBI can experience difficulties with relationships years after the injury, which can in turn affect life satisfaction and QoL. Dyer and Das Nair (34) raised concerns about how sexuality is viewed by professionals after TBI, however, it is important to also understand how dating is viewed, and if or how professionals can intervene in this area. A consideration of dating is separate from exploration into marital or longer-term relationships after TBI. This, instead, focuses on those seeking and establishing new relationships.

The authors are unaware of any other previous surveys into dating in TBI. Other studies considering views and involvement of professionals have focused on sexual issues (e.g. 34, 38). This study will explore the experiences and beliefs of rehabilitation professionals in addressing dating skills for people with TBI.

This study will attempt to answer the following questions

(1) What do professionals believe about the impact of TBI on dating?
(2) What are professionals' attitudes toward offering rehabilitation to develop the skills to date after TBI?
(3) What approaches are used by rehabilitation professionals to develop dating skills after TBI?

The term "rehabilitation" has been used throughout this article to refer to the process of rehabilitation, i.e. supporting a person to re-learn skills or develop new skills aimed at reducing the level of impairment resulting from their TBI and improving participation and well-being. This process can occur in a variety of settings including inpatient rehabilitation and community settings (39).

Method

An online survey study was carried out to explore professionals' beliefs and experiences in providing rehabilitation for dating skills after TBI. This research was completed and reported according to the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (40), see appendix I for completed checklist.

Survey development

The term "dating" was chosen for the survey as it is a commonly used word, and covers a wide range of activities, from casual relationships, sexual relationships, to people seeking longer term commitment. In a recent systematic literature review (31), the authors identified seven papers across three neuro-atypical populations (ASD, learning disability and brain injury) that addressed interventions to support people to form new relationships (20,32,33,41–44). Of these seven studies, five used the word "dating" either in the title of their intervention, or in the text when describing the content and focus of the intervention. As there is little research in this area the authors felt that it would be beneficial to include responses on different types of dating interactions. The participants were allowed to interpret the term "dating" as they chose.

The survey was created using an iterative process between the authors, drawing on key literature on dating, professional roles, and therapeutic activities relevant to this topic.

Following this process, the usability of the survey was tested with three professionals: a speech and language therapist, a clinical psychologist, and a research assistant. Based on feedback from this group changes were made to some response categories in the demographics section and in the frequency responses questions, one question that elicited very similar information to another was removed.

The final 52-item survey was constructed on Qualtrics (45), see appendix II for survey questions. Response formats included yes/no, multiple choice, 4- and 5-point Likert scales and open-ended text boxes. The survey questions covered eight areas: (1) participant demographics (10 questions); (2) beliefs about the impact of TBI on dating and relationships (5 questions); (3) beliefs on professional roles (4 questions); (4) personal feelings about supporting dating (3 questions); (5) perceived attitudes of others (4 questions); (6) resources and knowledge (5 questions)

(7) perceived demand for rehabilitation for dating skills (1 question); (8) experiences supporting adults with TBI to learn skills for dating (18 questions). There was also a consent question at the start and an opportunity to leave final comments at the end.

Participants and procedures

A link to the survey was sent out via e-mail to professional networks in the field of TBI (including clinical excellence networks, special interest groups and charitable organizations) and shared on social media platforms (Facebook and Twitter). A snowball recruitment method was used, where participants were encouraged to share the survey link with their contacts who met the eligibility criteria.

The inclusion criteria for this study were as follows (1): professionals supporting adults with TBI (2), working in inpatient or outpatient rehabilitation or community settings. Participants were excluded if they (1): worked with adults in a nonprofessional capacity (i.e. support workers or carers) (2), only worked with people under the age of 18 (3), only worked in acute medical settings.

The survey responses were collected between February and May 2019. The invitation to participate advised potential participants that engagement was sought both from professionals who had supported dating skills and those who had not. This was intended to allow responses to be gathered from professionals with a range of beliefs and experiences in this area. As part of the invitation to participate, participants were informed of the purpose of the study, number of questions and predicted time that it would take, they were then provided with a link to the electronic survey.

Ethical approval

Ethical approval for the study was given by City, University of London, reference number ETH1819-0360.

Analysis

Data was exported from Qualtrics to Microsoft Excel to allow the data to be formatted before it was entered into the statistical package, SPSS-25 (46). Incomplete surveys were deleted during the data collection (this included all surveys where the respondent did not reach the final page of the survey) and so have not been included in the analyses. Analysis of the remaining data was completed using SPSS (46). Frequency counts were used for the demographics, ratings and agreement scales for the impact of TBI on dating and the role of professionals in supporting this, personal feelings such as comfort and confidence levels and support for dating skills in rehabilitation. Where levels of agreement are reported, ratings for strongly agree–agree and strongly disagree–disagree have been collapsed and reported as agree or disagree, unless otherwise indicated. Responses to the open-text questions were analyzed on NVivo (47), using frequency counts and content analysis (48). The first author read through the responses, then grouped them into initial concepts, before reviewing these to identify overarching categories in the responses. These categories were reviewed by the last author to confirm and verify the analysis

Results

Of the 131 people who initially completed the survey, three were excluded as they met one of our exclusion criteria (only worked in acute medical settings) and three were excluded as they did not identify as a particular professional. One hundred and twenty-five participants were included in the final analysis (see Table 1). The samples were predominantly female (n = 107, 85.6%) and from the private sector (n = 84, 67.2%). There was a variety of different professional groups, with SLTs (31.2%), OTs (21.6%), Case managers (16.8%) and psychologists (14.4%) representing the largest groups in the sample. In the UK Case Managers are health and social care professionals who step away from their clinical roles (e.g. nurses, social workers, OTs, physiotherapists) (49).

The impact of TBI on dating skills

The first objective of this study was to understand whether professionals working in TBI rehabilitation believed that dating skills could be impacted by this type of injury. The perception of how many adults with TBI would have difficulties with dating

Table 1. Participants' demographic and professional characteristics (n = 125).

Variable	N	%
Gender		
Male	18	14.4%
Female	107	85.6%
Age		
20–30 years	12	9.6%
31–40 years	36	28.8%
41–50 years	51	40.8%
51–60 years	20	16.0%
61–65 years	4	3.2%
>65 years	2	1.6%
Profession		
Speech and Language Therapist	39	31.2%
Occupational Therapist	27	21.6%
Physiotherapist	7	5.6%
Case Manager	21	16.8%
Social Worker	6	4.8%
Psychologist	18	14.4%
Nurse	4	3.2%
Other	3	2.4%
Sector		
Private	84	67.2%
Public	41	32.8%
Location of work		
Inpatient rehabilitation	33	24.2%
Residential rehabilitation	13	10.8%
Outpatient or community	75	61.7%
Other	4	3.2%
Years since graduation		
0–5 years	9	7.2%
6–10 years	21	16.8%
11–15 years	23	18.4%
16–20 years	21	16.4%
>20 years	51	40.8%
Amount of time working in rehabilitation		
<1 year	4	3.2%
1–5 years	28	22.4%
6–10 years	23	18.4%
11–15 years	29	23.2%
16–20 years	21	16.8%
>20 years	20	16.0%

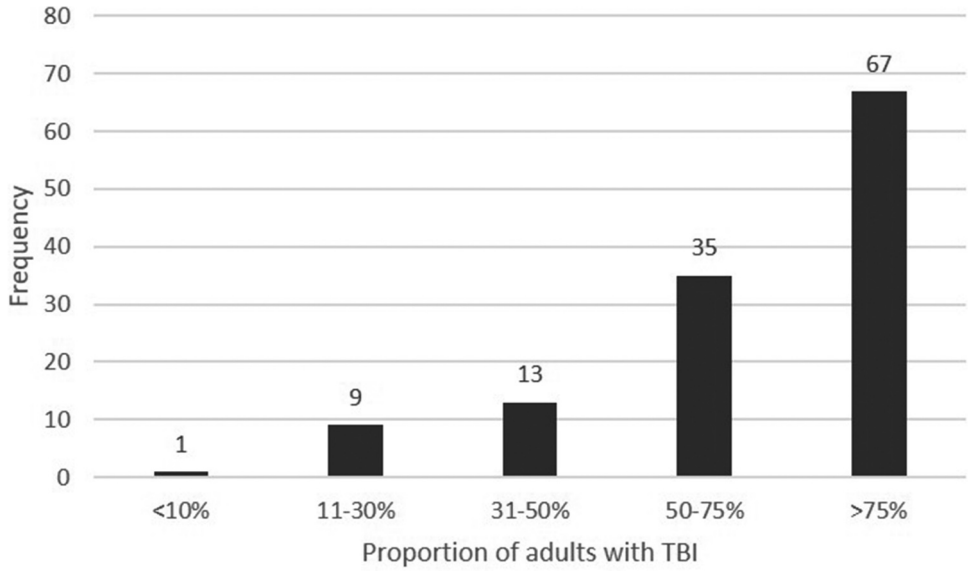

Figure 1. Perception of the proportion of adults with TBI who would have difficulties dating.

due to the impairments from their TBI is shown in Figure 1. The majority of participants (n = 102, 81.6%) felt that more than half of adults with TBI would have difficulties with dating.

Participants were also asked about their views on the impact of not including dating skills in rehabilitation. There was a strong response that, without this support, adults with TBI risk social isolation, which can lead to further negative consequences. The most commonly cited consequences were negative emotional consequences such as depression and changes to sense of self. Other negative consequences, such as behavioral changes including reduced engagement in other areas of life or rehabilitation or increases in challenging behavior linked to frustration, were less commonly identified.

This was illustrated by one participant, a Psychologist working in an outpatient/community setting:

> "People with TBI are socially excluded in participating in our society. My clients often report feeling lonely and wanting a partner/companion in their life. They are missing out on important relationships. This can lead to chronic depression."

The third commonly identified area of risk was vulnerability to abuse and scams. Participants identified the whole range of types of abuse including emotional, financial, sexual, and physical. Scams and abuse were identified as a risk in face-to-face dating and online dating.

One Occupational Therapist reflected that:

> "Adults with TBI tend to be vulnerable adults and are open to manipulation, grooming and extortion. If dating skills are not included in rehabilitation then these vulnerable adults are at risk of abuse in many forms."

Other concerns such as the person with TBI posing a risk to others, unwanted pregnancies, and sexually transmitted infections were identified only a small number of times.

Professionals' attitudes and feelings about offering rehabilitation for dating skills

The majority of professionals agreed that dating is an important part of rehabilitation (96%; n = 120), with the strongest agreement coming from OTs, social workers, case managers, and nurses. See Table 2 for the full results. Overall, there was overall strong agreement that it was part of participants' own roles (87.4%, n = 115), particularly for nurses (n = 4, 100%), case managers (n = 20, 95.2%), OTs (n = 25, 92.6%). However, the strength of the agreement is reduced compared to the previous question, which considered rehabilitation overall, not specific roles. See Table 3 for the full results.

Many participants were aware of rehabilitation for dating skills being completed by people within their own (60%, n = 75) or other professions (64.8%, n = 81).

Table 2. Dating is an important part of rehabilitation after TBI.

	Strongly agree	Agree	Disagree	Strongly disagree
SLT	11 (28.2%)	26 (66.7%)	2 (5.1%)	0
OT	15 (55.6%)	10 (37%)	1 (3.7%)	1 (3.7%)
PT	1 (14.3%)	6 (85.7%)	0	0
Social Worker	4 (66.7%)	2 (33.3%)	0	0
Case Manager	15 (71.4%)	6 (28.6%)	0	0
Psychologist	8 (44.4%)	10 (55.6%)	0	0
Nurse	3 (75%)	1 (25%)	0	0
Other	1 (33.3%)	1 (33.3%)	1 (33.3%)	0
Total	46.4%	49.6%	3.2%	0.8%

Table 3. Is rehabilitation for dating skills an important part of your role?.

	Strongly agree	Agree	Disagree	Strongly disagree
SLT	8 (20.5%)	26 (66.7%)	4 (10.3%)	1 (2.6%)
OT	9 (33.3%)	16 (59.3%)	2 (7.4%)	0
PT	0	6 (85.7%)	1 (14.3%)	0
Social Worker	1 (16.7%)	3 (50%)	2 (33.3%)	0
Case Manager	8 (38.1%)	12 (57.1%)	1 (4.8%)	0
Psychologist	6 (33.3%)	9 (50%)	3 (16.7%)	0
Nurse	3 (75%)	1 (25%)	0	0
Other	1 (33.3%)	0	1 (33.3%)	1 (33.3%)
Total	29.2%	59.2%	10.8%	0.8%

See appendix III for full results from these questions.

Participants (n = 117, 93.6%) thought Psychologists were best placed to address dating, followed by SLTs (n = 101, 80.8%) and OTs (n = 94, 75.2%). The lowest rated profession was physiotherapy (n = 21, 16.8%).

With respect to personal feelings toward addressing dating skills, the majority of participants indicated the topic was intrusive [79 (63.2%) agreed vs. 46 (36.8%) disagreed]. Participants appeared to have slightly higher levels of comfort compared to confidence in addressing dating as part of rehabilitation (Figure 2). See appendix III for the full results divided by profession.

For perceived levels of support, higher levels were reported to be given by managers (n = 109, 87.2%) and colleagues (n = 118, 94.4%) compared to funders of rehabilitation (n = 69, 55.2%).

Participants were asked about their perceived level of knowledge in this area. The majority of OTs, case managers and nurses felt they had sufficient knowledge to address dating skills in rehabilitation. All PTs and the majority of SLTs and social workers felt that they did not. See Table 4 for the full results.

Participants overwhelmingly thought that training should be offered 96.8% (n = 121) and that further research was needed in this area (agree 99.2%; n = 124). When asked about areas for training, participants were primarily focused on the training that could be provided to adults with TBI. There were four key areas that identified most regularly: (1) support for specific impairments, including social communication and social cognition; (2) developing relationships, including how and where to meet people, internet dating, and managing rejection; (3) risks, including internet dating, scams, and abuse; (4) sex and sexual health.

Intervention approaches were not commonly mentioned. Where they were identified participants appeared to favor behavioral approaches such as video and reflection or experiential learning.

Where participants discussed their own training needs the two areas that were most commonly highlighted were how to start a conversation about dating needs and sign posting to resources and expert support. Other areas such as the legalities, risk management, and computer and social media skills appeared to be less of a concern.

This concern was illustrated by a nurse, from an inpatient rehabilitation setting:

> "I think it should cover how to sensitively broach the conversation, how to help a TBI patient to manage their potential new level of inhibition and how to access further support in this area from specialists if needed."

What are common approaches used?

Approximately half of the participants (n = 64, 51.2%) reported that they had addressed dating skills as part of rehabilitation following TBI, but not routinely (rarely = 16 (25%), occasionally = 38 (59%), regularly = 10 (16%)). There was a demand for work to address dating skills from a range of sources (person with TBI = 68 (44%), other professionals = 42 (27%), family/friends = 46 (29%)). Many participants agreed that the topic could be initiated by either the person with TBI, professionals, or family and friends (82.4%, n = 103). A third of participants (n = 43, 32.4%) reported that they had never been asked to work on dating skills.

Table 4. Do you have sufficient knowledge to support adults with TBI to learn skills for dating?.

	Yes	No
SLT	11 (28.2%)	28 (71.8%)
OT	15 (55.6%)	12 (44.4%)
PT	0	7 (100%)
Case manager	11 (52.4%)	10 (47.6%)
Social worker	1 (16.7%)	5 (83.3%)
Psychologist	9 (50%)	9 (50%)
Nurse	3 (75%)	1 (25%)
Other	1 (33.3%)	2 (66.7%)
Total	51 (40.8%)	74 (59.2%)

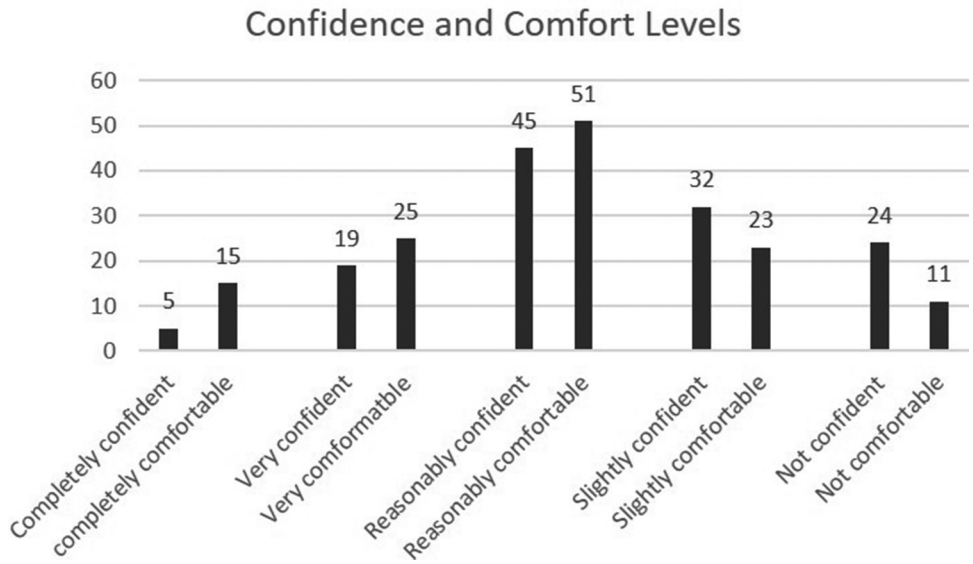

Figure 2. Confidence and comfort levels.

In TBI rehabilitation, participants indicated that dating skills are often dealt with reactively (60.8%, n = 76) rather than proactively (25.6%, n = 32) and 17 (13.6%) participants reported that this area addressed at all.

However, provision of information and support about dating appeared to vary considerably. It was variable whether participants told people with TBI that dating support could be offered (routinely/frequently = 27 (21.6%), sometimes = 41 (32.8%), occasionally = 31 (24.8%), never = 26 (20.8%)), or provided them with information about dating (38.4%, n = 48) or sexual difficulties (44%, n = 55).

Table 5 displays therapeutic activities completed by participants for working on dating skills with people with TBI. The activities are organized from most to least frequent based on total reported use (either rarely, occasionally, frequently or very frequently). The most reported used activity is managing sexualized or disinhibited behavior while the least reported activity is creating a dating profile.

Participants were given the opportunity to list any other activities that they have used; however, most participants did not identify any other activities. Those who did (n = 39, 31.2%) offered no clear consistency in terms of the types of activities that had been used. The two most common areas were use of sex workers and support for dating sites, but these were only identified by 6 (4.8%) and 11 (8.8%) participants, respectively.

Participants were also asked about the barriers to including dating skills in rehabilitation. Professional barriers were a common idea (n = 99, 79.2%) including lack of training, lack of time or funding and dating skills not viewed as a priority. There was also uncertainty over who should be doing this work and a feeling of lack of support from service providers, managers, or teams. Personal barriers were also regularly highlighted (n = 57, 45.6%). These included embarrassment, or lack of comfort in addressing dating and relationships, lack of confidence, anxiety about risks, including increasing inappropriate social behaviors, and the harm that may be caused by rejection, and biases about the appropriateness of adults with TBI engaging in dating. People with TBI and their families were seen by some as a barrier (n = 36, 28.8%), due to lack of insight or executive impairments, the area not being identifying as a goal by the individual with TBI, or families viewing this work as inappropriate or irrelevant.

Discussion

The purpose of this study was to understand the beliefs and current practices of professionals working in rehabilitation after TBI in relation to dating skills. Responses were sought from a range of professionals involved in rehabilitation after TBI. A total of 125 participants were included in the analysis, representing a range of ages and degrees of experience within these professions. This survey recruited more people from the private sector compared to the public sector. Similar studies have not reported the proportions from different sectors (34).

The results indicate that the majority of professionals working with adults after TBI believe that dating skills are likely to be affected after a brain injury. This is an important part of rehabilitation after TBI, without which there is a risk that adults with TBI will experience long-term impacts on dating abilities and remain vulnerable to the potentially significant psychosocial impacts of failed dating experiences, reduced QoL and exploitation or abuse.

The participants in this study highlighted their concern that adults with TBI could be vulnerable to exploitation or abuse when dating. Participants highlight the importance of interventions for dating skills, but also the risks of exploitation and abuse linked to dating itself. There is a need for these interventions to reflect a balance between protection and facilitation, as suggested for dating interventions for other neuroatypical populations (e.g. 50).

This survey has highlighted some possible reasons for the lack of interventions on dating skills following TBI to date. The lack of clear responsibility for who should be addressing this area and a perceived lack of knowledge or skills were strongly identified in this study and previous studies (e.g. 34). Three professions were commonly identified as well-placed for this work (psychologists, OTs and SLTs), however case managers also considered this work as part of their role. Most likely as they function as coordinators of care and rehabilitation whereby, they delegate work to different members of the MDT. Previous research highlights the value of an MDT approach for dating and relationships (5) Supporting dating skills is not clearly identified in the Scope of Practice for any of the professionals included in this study; however, different skills link to areas of practice, such as communication skills and SLTs. Greater guidance could show how professionals can coordinate their input in these different areas to provide a comprehensive approach to the broad range of skills needed. Participants reported perceived discomfort or embarrassment

Table 5., Therapeutic activities for dating skills.

Activity	Total reported use	Very frequently	Frequently	Occasionally	Rarely	Never
Sexualized/ disinhibited behavior	106 (84.8%)	21 (16.8%)	38 (30.4%)	37 (29.6%)	10 (8%)	19 (15.2%)
Interaction style with new people	114 (91.2%)	28 (22.4%)	42 (33.6%)	36 (28.8%)	8 (6.4%)	11 (8.8%)
How to meet new people	108 (86.4%)	18 (14.4%)	33 (26.4%)	42 (33.6%)	15 (12%)	17 (13.6%)
Types of relationships	103 (82.4%)	12 (9.6%)	24 (19.2%)	46 (36.8%)	21 (16.8%)	22 (17.6%)
Appropriateness of dating partners	101 (80.8%)	12 (9.6%)	22 (17.6%)	47 (38.6%)	20 (16%)	24 (19.2%)
Education on healthy relationships	98 (78.4%)	11 (8.8%)	24 (19.2%)	43 (34.4%)	20 (16%)	27 (21.6%)
Interaction style for dating partners	96 (76.8%)	13 (10.4%)	21 (16.8%)	39 (31.2%)	23 (18.4%)	29 (23.2%)
Sex	85 (68%)	8 (6.4%)	16 (12.8%)	34 (27.2%)	27 (21.6%)	40 (32%)
Coping with rejection	82 (65.6%)	7 (5.6%)	18 (14.4%)	33 (26.4%)	24 (19.2%)	43 (34.4%)
Key attributes for dating partners	68 (54.4%)	7 (5.6%)	8 (6.4%)	38 (30.4%)	15 (12%)	57 (45.6%)
Social stories for dating behaviors	65 (52%)	5 (4%)	11 (8.8%)	19 (15.2%)	30 (24%)	60 (48%)
Creating a dating profile	41 (32.8%)	1 (0.8%)	1 (0.8%)	23 (18.4%)	16 (12.8%)	84 (67.2%)

as a potential barrier. This is in keeping with findings from Krantz et al. (51), who also suggested that levels of discomfort may lead to professionals avoiding this area. Perceived level of support was highlighted as a possible barrier, with less perceived support from fundholders compared to managers and colleagues. Larkin, Worrall and Hickson (52) have identified that different stakeholders may prioritize elements of communication rehabilitation differently. Communication is a key component of relationships or dating (6), so this could help to explain the different levels of support perceived from colleagues, managers, and funders. This may also be relevant to prioritization for areas of rehabilitation differently, which may lead to skills for activities of daily living, or return to work being prioritized rather than personal relationships and dating. It is also possible that rehabilitation for dating skills may be more appropriate at different stages of rehabilitation, this may be influenced by insight into impairments affecting interaction with others, this can develop and change with increasing time since injury (53).

This study has highlighted the limited provision of information on dating difficulties and variability in whether adults with TBI are told about difficulties or support in this area. A model that could help to guide provision of information is the PLISSIT model (Permission, Limited Information, Specific Suggestions, Intensive Therapy) (54). This has been suggested in previous literature to guide input for sexual difficulties (5,38,55) but may also be relevant to dating. This model suggests that the first level of support is to acknowledge to people with TBI that they may experience difficulties in these areas and give them permission to ask for support. Inconsistently achieving the first level may itself create a barrier to the later levels of direct therapeutic input. It is also interesting to note that some participants felt that in order to address this area in rehabilitation it should first be raised as a goal by the person with TBI despite difficulties with insight are well documented for people with TBI (56,57) and were commonly identified by participants in this survey. Participants in this survey were also keen for signposting to resources and expert support, suggesting that they themselves may require further support before offering specific suggestions or intensive therapy for the individual with TBI. A higher proportion of SLTs who are considered communication specialists felt that they lacked the knowledge to support the development of dating skills despite evidence highlighting the importance of communication for relationships (6). This could be due to SLTs requiring further education on this topic and how to engage with adults with TBI on dating skills and impairments. A need for further training was highlighted by the majority of participants in this survey.

This survey suggests that attempts are being made to address dating as part of rehabilitation. However, the three highest rated activities by participants (managing sexualized or disinhibited behaviors, interacting with new people, how to meet new people) may be more related to general social rather than dating skills. Participants appeared to prefer behavioral approaches to deliver this rehabilitation in keeping with the INCOG (International Cognitive Expert Panel) recommendations for cognitive communication difficulties after TBI (58). Group-based rehabilitation was less frequently reported, which was a further INCOG recommendation for addressing insight and executive functioning (59). Both of which were raised by the participants in this survey as potential issues. The INCOG recommendations also highlight the importance of considering insight when planning or delivering an intervention. The insight of people following TBI was repeatedly raised by the participants in this survey as a potential barrier and would likely be important to address alongside the skills needed for dating. Studies on communication and cognitive impairments following TBI may provide some valuable insights to guide interventions on dating and intimate relationships.

Another area that may be important to consider in future research is the impact of stigma on adults with TBI who are seeking relationships. Previous research on neuro-atypical groups has indicated that stigma can have both an external impact (i.e. negative beliefs held by others) and an internal impact (i.e. negative beliefs held by the individual about themselves) (60,61). Both of these areas of stigma may affect adults with TBI when they attempt dating. Future research could consider both the impact of stigma on adults with TBI seeking relationships and the awareness of this during rehabilitation.

Limitations and suggestions for further research

There are several important limitations to this study. There were potential biases in recruitment, it is likely that people already interested in this topic were motivated to complete this survey. Due to the way the data was recorded it was also not possible to review the incomplete questionnaires; therefore, it is not possible to know whether there were differences between the people who completed the survey in full and those who did not. It should also be recognized that there were significant differences between the included and excluded participants in terms of age and level of experience. It is therefore possible that the results of this study under-represent the views and experiences of younger professionals with fewer years of experience in rehabilitation. There was also a greater number of participants recruited from the private sector compared to the public sector, which may skew the results to reflect the experiences and practice of clinicians working in this sector. The study also relied on a snowball method of recruitment, however directly contacting rehabilitation departments in the NHS may have been more effective method to recruit from this sector. There were small numbers in several of the professional groups, further limiting generalizability.

There were limitations in the survey questions and approach. An attempt was made to gather greater detail from participants through free-text questions; however, follow-up interviews may have gathered greater depth of detail more effectively. Participants were not asked to define dating, so may have interpreted the term differently. The predominant focus of the survey was on developing dating skills that people with TBI may or may not have insight into; and severity of injury was not explored. The topic of dating is complex and multifaceted so this survey was intended to get a preliminary overview of dating without asking an excessive number of questions that would increase respondent burden. Due to the limited literature on TBI and dating, some of the items were drawn from other neuro-atypical populations (e.g.

learning disability). The appropriateness of generalizing information from one population to another in this way is a serious question.

Participants highlighted a range of interventions for dating skills however, further research is needed to identify key areas for an intervention program for dating skills, to demonstrate the efficacy of such a program and to consider which professionals may be best equipped to provide this kind of intervention. Exploration of the views and experiences of people with TBI into their own experiences of dating and the support they have been offered would also be valuable to develop understanding of this area.

This was intended as a preliminary study into this area; therefore, a broad approach was taken to what information was gathered. This study did not differentiate between people with mild, moderate, or severe TBI or the types of impairments that people can present with post-TBI. Both of these areas are likely to have an impact on the types of intervention and content of interventions aimed at supporting dating after TBI. Future research should consider looking in more detail at these areas.

Conclusions

This study has highlighted that dating skills are recognized as an important area to address in rehabilitation following TBI. However, fewer participants actually engaged in this work. The results of this study identified that a lack of knowledge and confidence in participants may be potential barriers to addressing this area and that there is a need for further training.

Hopefully, this survey can also progress our awareness of the importance of considering peoples' social networks more generally within rehabilitation, including longer term relationships and friendships as well as dating.

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Declaration of interests

The authors declare no conflicts of interest.

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Appendix I

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)
(Eysenbach, 2004)

Item Category	Explanation
Design	This was a convenience sample of health care professionals working in rehabilitation with adults after TBI
Institutional Review Board (IRB) approval	This study was approved by City, University of London (ETH1819-0360).
IRB Informed Consent	Participants were told the name of the main author, the aims of the survey, the number of questions (51) and approximate length of time that the survey would take to complete (15–20 minutes). Participants were also told that personal information would be stored securely and separately from the main results.
IRB Data Protection	Participants were given the opportunity to record their e-mail addresses to receive a summary of the results. This was the only personal information recorded. The e-mail addresses were stored on the university server in a password protected file.
Development and Pre-Testing	The survey was created by the authors, through drawing on key themes in the literature on dating, professional roles and therapeutic activities related to dating and relationships. The survey was usability tested with three professionals which resulted in changes to response categories and the removal of one question that was felt to be too similar to another question.
Recruitment Process – Open or closed survey	The was an open survey.
Recruitment Process – Contact Mode	Contact was made with potential participants via e-mail and social media sites including Twitter and Facebook.
Recruitment Process – Advertising the Survey	The survey was advertised through relevant professional mailing lists, and on social media sites including Twitter and Facebook.
Survey Administration – Web or E-Mail	The survey was a web-based survey, participants were provided with a link that directed them to the survey, created on Qualtrics.
Survey Administration – Context	The survey was created and hosted on Qualtrics; potential participants were directed to the survey using a link in the invitation to participate message.
Survey Administration – Mandatory or voluntary	The survey was voluntary, visitors to the survey were not required to complete the survey.
Survey Administration – Incentives	There were no incentives offered for completing the survey
Survey Administration – Time and date	The survey was open for data collection between February and May 2019.
Survey Administration – Randomization of items	The survey items were presented in a consistent order, there was no randomization.
Survey Administration – Adaptive Questioning	There were 3 questions which were conditionally displayed depending on answers to previous questions. This adaptive questioning was designed to either gain further details to a question, or to clarify a previous question where multiple answers were selected.
Survey Administration – Number of items	There were 52 items in the survey.
Survey Administration – Number of Screens	Each question was displayed on a separate screen, there was also an additional screen at the end of the survey thanking the participants for their time.
Survey Administration – Completeness check	Completion on questionnaires was automatically checked by Qualtrics, based on the participants who reached the final screen. Incomplete questionnaires were not saved.
Survey Administration – Review Step	Participants were able to navigate back through the questionnaire to change previous responses.
Response Rates – Unique site visitor	There was no attempt made to measure unique site visitors.
Response Rates – View rate	There was no attempt made to measure view rates.
Response Rates – Participation Rate	There was no attempt made to measure view rates
Response Rates – Completion rate	Incomplete surveys were deleted by Qualtrics, so it was not possible to compare the participation with the completion rate.
Preventing multiple entries – cookies used	Cookies were not used to identify unique users.
Preventing multiple entries – IP check	The computer IP address was not used to identify unique users. As this survey was targeted at health professionals it was anticipated that participants may be in shared offices, using the same computers.
Preventing multiple entries – Log file analysis	Log files were not recorded or analyzed to detect multiple entries.
Preventing multiple entries – Registration	This was an open survey; users were not required to register to access the survey.
Analysis – Handling of incomplete questionnaires	Only completed questionnaires were analyzed.
Analysis – Questionnaires submitted with an atypical timestamp	The completion time for questionnaires was not measured.
Analysis – Statistical correction	There was no statistical correction applied to the results.

Appendix II

Survey Questions

(1) Participant information statement:
- I wish to participate [if selected progress onto first question in survey]
- I do NOT wish to participate [if selected skip to end of survey]

(2) Please select your age group:
- 20–30 years
- 31–40 years
- 41–50 years
- 51–60 years
- 61–65 years
- Over 65 years of age

(3) Please select the gender that you identify as:
- Male
- Female
- Other

(4) Please select your professional discipline:
- Speech and Language Therapist
- Occupational Therapist
- Physiotherapist
- Case Manager
- Social Worker
- Psychologist
- Nurse
- Other (please specify)

(5) Please select the area(s) that you currently work in:
- Private health care sector
- Public health care sector (i.e. NHS)

(6) Please select the setting(s) you currently work in (select all that apply):
- Inpatient acute setting
- Inpatient rehabilitation setting
- Residential rehabilitation setting
- Outpatient or community rehabilitation setting
- Other (Please specify)

(7) [Display this question if more than one option is selected in the previous question]

In the previous question you indicate that you work in multiple settings, in this question please select the setting that you predominantly work in or the setting on which you would like to base your answers for this survey:

- Inpatient acute setting
- Inpatient rehabilitation setting
- Residential rehabilitation setting
- Outpatient or community rehabilitation setting

(8) Please select the number of years since you graduated:
- 5 years or less
- 6–10 years
- 11–15 years
- 16–20 years
- More than 20 years

(9) Please select the amount of time that you have worked in rehabilitation with adults with traumatic brain injury (TBI) (if you have moved between different rehabilitation settings then please provide the total time that you have spent working in rehabilitation with adults with TBI):
- Less than a year
- 1–5 years
- 6–10 years
- 11–15 years
- 16–20 years
- More than 20 years

(10) Are there any time limits placed on how long you can offer TBI rehabilitation? Please select all that apply
- Up to 6 weeks
- Up to 6 months
- Up to 1 year
- As long as clinically needed
- As long as funding remains

(11) Please estimate the percentage of your caseload that is adults with TBI:
- 5% or less
- 6–10%
- 11–30%
- 31–50%
- 51–75%
- More than 75%

(12) Please estimate how many adults with TBI you believe would have difficulty in dating due to impairments caused by their TBI:
- None
- Less than 10%
- 11–30%
- 31–50%
- 51–75%
- More than 75%

(13) Addressing difficulties with dating is an important part of rehabilitation after TBI
- Strongly agree
- Agree
- Disagree
- Strongly disagree

(14) Addressing difficulties with dating can be seen as intrusive by adults with TBI
- Strongly agree
- Agree
- Disagree
- Strongly disagree

(15) Who do you feel should initiate discussions on dating skills and difficulties in this area? Please tick all that apply.
- The person with TBI
- The family or social contacts of the person with TBI
- The professional or clinician working with the person with TBI
- Other (please specify)

(16) Will there be an impact for adults with TBI if dating skills are not included in rehabilitation? Please explain your response. Free text

(17) Supporting adults after TBI to develop the skills for dating is part of my professional role
- Strongly agree
- Agree
- Disagree
- Strongly disagree

(18) Are you aware of other people in your profession addressing dating as part of rehabilitation with adults with TBI?
- Yes
- No

(19) Are you aware of other people in other professions addressing dating as part of rehabilitation with adults with TBI? If yes please specify
- Yes (text entry)
- No

(20) Which professional group do you feel is best placed to work on this area with adults with TBI? Please tick all that apply
- Speech and Language Therapists
- Occupational therapists
- Physiotherapists
- Social workers
- Case managers
- Psychologists
- Nurses
- Other (please specify)

(21) How **confident** do you feel in supporting an adult with TBI to develop skills for dating?
- Completely confident
- Very confident
- Reasonably confident
- Slightly confident
- Not confident at all

(22) How **comfortable** do you feel in supporting an adult with TBI to develop skills for dating?
- Completely comfortable
- Very comfortable
- Reasonably comfortable
- Slightly comfortable
- Not comfortable at all

(23) Do you feel that you have sufficient **knowledge** to support adults with TBI to learn skills for dating?
- Yes
- No

(24) In your role would you say that difficulties in dating are addressed:
- Proactively
- Reactively
- Initiating romantic relationships is not addressed

(25) Do you feel that your management (e.g. line managers, clinical supervisors or team leaders) would support rehabilitation work to develop skills for dating?
- Yes
- No

(26) Do you feel that service funders would support work to develop skills for dating?
- Yes
- No

(27) Do you feel that your colleagues would support rehabilitation work to develop skills for dating?
- Yes
- No

(28) Do you provide information for people with TBI on the difficulties that they may experience with dating?
- Yes
- No

(29) Do you provide information for people with TBI on the difficulties that they may experience with sexual interactions?
- Yes
- No

(30) Do you feel that training for professionals should be offered specifically in how to address dating after TBI?
- Yes
- No

(31) If training were offered in supporting adults with TBI to develop skills for dating, what areas do you think it should cover: *[display only if answered "yes" to previous question]* Free text

(32) further research is needed to understand how to support adults with TBI to engage in dating
- Strongly agree
- Agree
- Disagree
- Strongly disagree

(33) Have any of the following ever asked you to support an adult with TBI to develop dating skills? (tick all that apply)
-
another professional
- a family member or social contact of the person with TBI
- the person with TBI
- I've never been asked to address this area
- Other (Please provide more information)

(34) Have you ever supported an adult with TBI to learn skills for dating?
- Yes
- No

(35) [Display if "yes" selected to previous question] Please estimate how often you have addressed skills for dating as part of rehabilitation with adults with TBI:
- Rarely
- Occasionally
- Regularly

(36) What do you think are the main barriers to professionals supporting adults with TBI to learn skills for dating? Free text

In your work do you let people with TBI know that dating is an area they can raise if they are experiencing difficulties?
- Never
- Occasionally
- Sometimes
- Frequently
- Routinely

(37) -49.Have you ever worked with an adult with TBI in any of the following areas?
- Likert scale response options – Never, rarely, occasionally, frequently, very frequently.
- Activities:
  - Create a dating profile (online or on paper)
  - Education on a healthy relationship
  - Considering key attributes for potential dating partners
  - How to meet new people
  - Appropriate behaviors and communication for when meeting new people (verbal and/or non-verbal)
  - Appropriate behaviors when meeting and interacting with potential romantic partners (verbal and/or non-verbal)
  - Appropriate and inappropriate romantic partners (e.g. social contacts or staff)
  - Appropriate behaviors when managing rejection
  - Managing sexualized or disinhibited comments or behaviors
  - Understanding different types of relationships
  - Social stories for understanding dating behaviors
  - Understanding issues related to sex (e.g. body awareness, menstruation, birth control, changes in sexual functioning after TBI)

50. Are there any other areas or activities that you have used to target dating skills for adults with TBI? Free text

51. Are there any other comments that you would like to make about rehabilitation for dating skills among adults with TBI? Free text

Appendix III

Table 3a. Are you aware of other professionals addressing dating in rehabilitation (results split by same or different profession as the participant).

	Same Profession		A different profession	
	Yes	**No**	**Yes**	**No**
SLT	23 (59%)	16 (41%)	25 (69.1%)	14 (35.9%)
OT	17 (63%)	10 (37%)	18 (66.7%)	9 (33.3%)
PT	2 (28.6%)	5 (71.4%)	4 (57.1%)	3 (42.9%)
Case Manager	15 (71.4%)	6 (28.6%)	14 (66.7%)	7 (33.3%)
Social Worker	3 (50%)	3 (50%)	3 (50%)	3 (50%)
Psychologist	12 (66.7%)	6 (33.3%)	12 (66.7%)	6 (33.3%)
Nurse	2 (50%)	2 (50%)	3 (75%)	1 (25%)
Other	1 (33.3%)	2 (66.6%)	2 (66.7%)	1 (33.3%)
Total	75 (60%)	50 (40%)	81 (64.8%)	44 (35.2%)

Table 3b. how confident do you feel in providing rehabilitation for dating skills?.

	Completely confident	Very confident	Reasonably confident	Slightly confident	Not confident
SLT	1 (2.6%)	4 (10.3%)	10 (25.6%)	13 (33.3%)	11 (28.2%)
OT	1 (3.7%)	4 (14.8%)	12 (44.4%)	6 (22.2%)	4 (14.8%)
PT	0	0	1 (14.3%)	3 (42.9%)	3 (42.9%)
Case manager	3 (14.3%)	4 (19%)	8 (38.1%)	5 (23.8%)	1 (4.8%)
Social worker	0	1 (16.7%)	2 (33.3%)	2 (33.3%)	1 (16.7%)
Psychologist	0	3 (16.7%)	10 (55.6%)	3 (16.7%)	2 (11.1%)
Nurse	0	2 (50%)	2 (50%)	0	0
Other	0	1 (33.3%)	0	0	2 (66.7%)
Total	4%	15.2%	36%	25.6%	19.2%

Table 3C. How comfortable do you feel in providing rehabilitation for dating skills?.

	Completely comfortable	Very comfortable	Reasonably comfortable	Slightly comfortable	Not comfortable
SLT	3 (7.7%)	6 (15.4%)	18 (46.2%)	8 (20.5%)	4 (10.3%)
OT	2 (7.4%)	6 (22.2%)	12 (44.4%)	4 (14.8%)	4 (11.1%)
PT	0	0	4 (57.1%)	2 (28.6%)	1 (14.3%)
Case manager	7 (33.3%)	3 (14.3%)	8 (38.1%)	3 (14.3%)	0
Social worker	0	0	3 (50%)	3 (50%)	0
Psychologist	2 (11.1%)	6 (33.3%)	6 (33.3%)	3 (16.7%)	1 (5.6%)
Nurse	1 (25%)	3 (75%)	0	0	0
Other	0	1 (33.3%)	0	0	2 (66.7%)
Total	12%	20%	40.8%	18.4%	8.8%