Audit of the job satisfaction levels of the UK radiography and physics workforce in UK radiotherapy centres 2012

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FULL PAPER

Audit of the job satisfaction levels of the UK radiography and physics workforce in UK radiotherapy centres 2012

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Objective: Workforce planning reports identify a staff shortfall that jeopardizes the ability of UK radiotherapy centres to meet future demands. Obtaining an understanding of the work experiences of radiotherapy professionals will support the development of strategies to increase job satisfaction, productivity and effectiveness.
Methods: A quantitative survey assessed job satisfaction, attitudes to incident reporting, stress and burnout, opportunities for professional development, workload, retention and turnover. Clinical oncologists were not included, as the Royal College of Radiologists, London, UK, had recently assessed their members' satisfaction. All questions were taken from validated instruments or adapted from the "UK National Health Service Staff Survey".
Results: The survey yielded 658 completed responses (approximately 16% response rate), from public and private sectors. Over a third (36%) of respondents were classified as satisfied for job satisfaction with 11% dissatisfied and the remaining 53% ambivalent. A significant proportion of clinical staff (37.5%) report high emotional exhaustion. Presenteeism was an issue with 42.4% attending work despite feeling unable to fulfil their role.
Conclusion: Radiotherapy professionals are prone to the effects of compassion fatigue and burnout. Attention must be paid to workload and its impact on practitioners' job satisfaction. Professional development that is supported and informed by a performance development review is a simple and effective means of enhancing satisfaction. Individuals have a responsibility to themselves and their colleagues as their behaviours and attitudes influence job satisfaction.
Advances in knowledge: This work identifies areas for future research to enhance the professional resilience of practitioners, in order to provide high-quality treatments.

An increasing incidence of cancer and an ageing population coupled with improved, expanded screening programmes and the introduction of new more-complex treatment technologies are leading to an increased demand for radiotherapy.[1] In the UK, National Radiotherapy reports have consistently identified shortfalls in key staff groups to meet this increased demand.[2–4]

Interest exists in providing increased flexibility for patient appointments[5] in the UK and maximizing the use of high-cost equipment such as linear accelerators.[6] Currently, 90% of radiotherapy is delivered between 9 am and 5 pm, Monday to Friday.[5] The professional bodies in the UK are establishing a working party to develop guidance for services in extending the working hours and improving access for patients. A more flexible, expansive service is proposed for future working, and this is likely to require additional personnel and a flexible workforce.

The combination of increased cancer incidence, drive for quality[7] and an increasingly informed and empowered patient population has seen the projections for radiotherapy provision rise. The National Radiotherapy Advisory Group[4] reported that a significant increase in current establishment is required, alongside retaining and developing the current workforce.[4,7] More recent estimates employing the workforce integrated planning tool,[8] Malthus[9] and the Radiotherapy Data Set[10] quantify the requirement as a 39% increase in therapeutic radiography workforce and a 31% increase in the radiotherapy physics workforce by 2016.[7]

There is a concern that the workforce is being placed under considerable pressure, and this article reports on work that

has been undertaken to examine aspects of this. Maintaining a motivated radiotherapy workforce is critical to the safe delivery of high-quality radiotherapy services. Maintaining and improving morale in the existing workforce will be a key success factor in delivering high-quality treatment and care.[4,11,12] Recruitment, retention and development through improved management and influencing perceptions must remain a priority.

Implementation of the career progression framework, for example, the four-tier structure for therapeutic radiographers, offers potential for greater job satisfaction by offering a professional development opportunity. In 2012, only 4 out of 50 English National Health Service (NHS) centres reported that they had implemented the career progression framework for radiography fully[7] within radiotherapy, this may also be leading to less job opportunities and career development. There is a need to review skill requirements across the pathway in response to changing technology and demands to ensure that services are developed effectively and efficiently and to a high standard focused around the needs of patients. The size and skill mix of the radiotherapy workforce remains a potential barrier to increasing radiotherapy access for patients, developing sufficient workforce to meet the likely growth of the service is a challenge.

Health Education England has recently recommended a modest increase in training commissions (3.1% for therapeutic radiographers),[13] although the main focus must remain on reducing attrition from undergraduate training of radiographers.[14] The most frequently cited rationale for not completing training is poor clinical placement experience, followed by perceived incidents of bullying and harassment in the clinical or academic environment.[15–17] If morale is low amongst the qualified workforce, this is likely to have an impact on students' placement experience. In addition to students reporting bullying and harassment, there is evidence of bullying in the qualified workforce.[18,19] This may be a manifestation of low morale. Also, clinical sites need to be aware that making extra training capacity may negatively impact on placement opportunities for students.

Shortage of radiotherapy workforce

The most recent data report a 6.3% and 8.2% vacancy for therapeutic radiographers and clinical scientists, respectively.[20] The report identified a geographical variation in vacancies, and also a variation between vacancy rates for staff groups within medical physics departments in the UK. Vacancy rates are reported as 14.6% in Scotland for physics and radiography, and an average vacancy rate amongst clinical technologists, dosimetrists and engineers of >9% across the UK. Therapeutic radiographers remain on the UK shortage occupation list.[21] The vacancy situation for the radiography workforce is exacerbated by significant attrition from therapy radiography training programmes[14–17] (average, 36.5%; 2010/11), which remains consistently higher than that of comparable professions. Unpublished data [College of Radiographers Approvals and Accreditation Board (AAB) Annual Report, 2013, personal communication] show that attrition has dropped to 25% across the UK for those starting their training in 2010 and completing it before 31 August, 2013. Therapeutic radiographers report more negative perceptions than other allied health professionals.[22] The reasons for shortages of key radiotherapy staff are multifaceted and vary geographically.[23,24] This shortage negatively impacts on the ability to implement and routinely deliver advanced treatment techniques such as intensity-modulated radiotherapy (IMRT) and adaptive radiotherapy.[11] For example, 87% of NHS trusts cited a shortage of physicists as the main barrier to delivering IMRT for those conditions where a benefit may exist.[20] The availability and skill mix of radiotherapy personnel is one of the "rate limiting steps" in improving productivity and quality.[12]

Workforce engagement

Low job satisfaction is directly correlated to withdrawal behaviours, up to and including turnover.[25] Resignation, and to an extent employee engagement, is powered by two drivers; "push" and "pull" factors. Pull factors are the positives that a new opportunity may provide. Push factors are issues negatively impacting the satisfaction of a current situation. Interestingly, push factors are reported as more significant in the literature.[26] Push factors are also referred to as controlled factors as they are internal and influenced by the organization.[27] Examples of push factors include management practice, policies, employees' empowerment and the notion of organizational justice.[28]

Organizational commitment is a predicative factor of employee retention, satisfaction and performance. The conceptualization of organizational commitment by Meyer and Allen[29] comprises three dimensions—affective, continuance and normative commitments. The affective commitment is an emotional attachment to the organization. The continuance commitment relates to the perceived costs, both financial and social, of leaving the organization. The normative commitment stems from an obligation to the organization. Positive outcomes are correlated with strengthening affective and normative commitments, where a strong affective commitment is associated with increased productivity and performance.[30,31]

When professionals are dissatisfied but remain in an organization, this may have negative effects on that individuals' performance and happiness and, consequently, to the organization. These effects may exceed that of turnover, relating to reduced performance, withdrawal behaviours and barriers to development and promotion for others. Somewhat surprisingly, given the relationship between job satisfaction, performance and retention, a paucity of data exists investigating the radiotherapy workforce.

Identifying and understanding the factors influencing satisfaction will aid the development of a strategy to enhance the engagement of radiotherapy professionals. Achieving this will give greater assurance that future productivity and quality in radiotherapy can be continually improved.

UK survey of job satisfaction

The objectives of the National Radiotherapy job satisfaction survey (JSS) were to:

- obtain an understanding of the professional experiences influencing job satisfaction of the radiotherapy workforce, including radiographers, clinical scientists, technicians, engineers, assistant practitioners (APs), trainee APs (TAPs) and trainee clinical scientists. Oncologists were not surveyed, as the Royal College of Radiologists members' satisfaction had been measured and reported on previously,[32–35] therefore it should

be noted that where the term radiotherapy workforce is used, it refers to physics and radiography staff only.
- support the development of strategies to enhance job satisfaction, productivity and effectiveness of the radiotherapy workforce.

METHOD AND MATERIALS

Design and pilot

A quantitative survey was employed using online SurveyMonkey® software. Validated instruments[36,37] were used with additional questions adapted from the NHS staff survey[19] (Table 1). A sample of the questions adapted from the NHS staff survey can be seen in Appendix 1. All the survey tools have been previously used and tested in a range of populations with good internal consistency. Psychometric validated instruments are valuable when there is a desire to evaluate abstract or hypothetical constructs, such as job satisfaction or burnout. A validated instrument gives the researcher confidence that the instrument measures what it purports to measure and additionally is reliable, that is, it measures the construct consistency across time, individuals and situations. Using validated instruments also facilitates comparison with previously studied cohorts. The survey was piloted ($n = 11$) across professional groups and a number of hospitals ($n = 5$) in January 2012.

A quantitative survey with a limited "free" response to add richness to the data was employed. The questionnaire comprised seven sections. Cronbach's co-efficient α represents internal consistency (correlating different items of the same test) and is an indication of the reliability of a psychometric test, a score of ≥ 0.7 is considered reliable (Table 1).

Job satisfaction survey

The job satisfaction section utilized the JSS,[36] which is a 36-item, 9-facet, validated scale to assess employee attitudes to their role and aspects of that role. A sample of the questions, as they appeared in the survey, can be seen in Appendix 2. A summated rating scale or Likert scale format is used to allow participants to express their preference. The scale has six choices per item ranging from "strongly disagree" to "strongly agree" with an associated numerical value of 6–1, respectively. The nine facets were pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, co-workers, nature of work and communication. "Fringe benefits" refers to fringe benefits of employment, for example, sick pay, annual leave and continuing professional development (CPD) opportunities. "Contingent rewards" relates to contingent rewards for good performance, for example, attending conferences, increased flexibility/autonomy and interesting tasks.

The JSS has been widely used in the healthcare sector allowing evaluation with comparative norms. The JSS has high internal consistency (Cronbach's co-efficient, 0.91)[38] providing assurance that the data would be valid and reliable. The JSS evaluates job satisfaction on a continuum from low (dissatisfied) to high (satisfied).

One can reference the norms and, compared with the studied sample, these norms are limited in two ways. First, the radiotherapy workforce and the NHS are not represented (while nurses are represented, the majority of the sample is drawn from a US population, a significantly different healthcare system to the UK). Second, the norms are not representative samples but rather an accumulation of, in the main, convenience samples. In other words, they are a convenience sample of convenience samples. Job satisfaction varies across countries and organizations, so one should not assume that these norms are representative of other countries or systems, particularly those that are culturally dissimilar from where the sample is drawn.

The absolute approach uses somewhat arbitrary, yet logical scoring, to represent dissatisfaction, ambivalence and satisfaction.

Table 1. Survey construction

Survey section	Instrument	Internal consistency	Reference
Demographics	N/A	N/A	N/A
Job satisfaction	Job satisfaction scale[36]	Cronbach's co-efficient α (overall) = 0.91	Spector[38]
Radiation incidents	Adapted from NHS Staff Survey[19]	N/A	N/A
Stress and burnout (clinical)	Mashlach Burnout Inventory[34] (human services)	Cronbach's co-efficient α, EE = 0.90, DP = 0.79, PA = 0.71. Test–retest reliability EE, $r = 0.75$; DP, $r = 0.64$; PA, $r = 0.62$	Schutte et al,[39] Leiter and Durup[40]
Stress and burnout (non-clinical)	Mashlach Burnout Inventory [37] (general)	Cronbach's co-efficient α, Ex = 0.88, Cy = 0.79, PE = 0.78. Test–retest reliability Ex = 0.65, Cy = 0.60, PE = 0.67	Storm and Rothmann,[41] Leiter and Schaufeli,[42] and Schaufeli et al[43]
Professional development	Adapted from NHS staff survey[19]	N/A	N/A
Workload	Adapted from NHS staff survey[19]	N/A	N/A
Retention and turnover	Adapted from NHS staff survey[19]	N/A	N/A

Cy, cynicism; DP, depersonalization; EE, emotional exhaustion; Ex, exhaustion; NHS, National Health Service; PA, personal accomplishment; PE, professional efficiency.

This allows an overall assessment of job satisfaction as well as elements of satisfaction represented by the individual facets. The JSS uses a six-point summated response scale, therefore, agreement with positively worded items and disagreement with negatively worded items would represent satisfaction. For the four-item subscales, as well as the 36-item total score, this means that scores with a mean item response (after reverse scoring the negatively worded items) of four or more represent satisfaction, whereas those with mean responses of three or less represent dissatisfaction. Mean scores between three and four are ambivalent (Table 2). Translated into the summed scores, for the 4-item facets with a range from 4 to 24, scores of 4–12 are dissatisfied, between 12 and 16 are ambivalent and a score of 16–24 represents satisfaction. For the total instrument, comprising 36 items, score can range from 36 to 216; a range of 36–108 represents dissatisfaction, 108–144 for ambivalence and 144–216 for satisfaction.

Maslach Burnout Inventory

The Maslach Burnout Inventory (MBI)[37] Human services survey was used for staff identifying themselves as predominantly clinical, for example, radiographers. This is a 22-item, 3-facet, validated scale that allows participants to state their preference using a Likert scale. Burnout is a cumulative disorder and affects an individual on an emotional, cognitive and behaviour level that may contribute to emotional exhaustion (EE), depersonalization (DP) and reduced productivity, respectively. The three facets represent EE, DP and personal accomplishment (PA).

EE is a chronic state of physical and mental depletion resulting from excessive demands and stress over time.[44] The phenomenon of being emotionally overextended and exhausted by work commitments contribute to symptoms of physical fatigue and a sense of feeling psychologically drained.[45] DP is an impersonal, negative or cynical attitude towards the recipients of one's care and treatment. PA measures feelings of competence and successful achievement in an individual's role. The warning symptoms of burnout can contribute to physical complaints, such as concentration problems, headaches, irritability and depression. These symptoms may also have an impact on colleagues, the organization and patients.

Table 2. Response by professional group

Professional group	Respondents	Response rate of population (%)
Clinical scientist	201	39.1
Engineer/technician	59	29.2
Trainee clinical scientist	31	25.8
Therapeutic radiographer	315	14.2
Dosimetrist	42	11.3
Trainee assistant practitioners/assistant practitioners	3	3.5
Total (that submitted profession)	651	16.0

Staff identifying themselves as predominately non-clinical (not having direct patient contact) completed the MBI General Survey. This 16-item, 3-facet, validated scale measures burnout in non-clinical respondents. The three subscales represent professional efficacy (PE), exhaustion (Ex) and cynicism (Cy). The PE construct is similar to PA, as measured by the MBI Health Services Survey and is concerned with satisfaction. PE is related to satisfaction and also autonomy and feedback. Ex is the result of role demands and the interaction with commitments away from work. Cy refers to distancing oneself from work itself and to the development of negative attitudes towards work in general.

Ethical considerations

This study was categorized as part service evaluation (the elements investigating the experiences and perceptions of individuals) and part audit (assessing engagement with professional development activities and reporting procedures). Radiotherapy professionals were recruited to complete the questionnaire via their professional bodies. Consequently, there was no requirement for this study to be considered by a UK research ethics committee.[46] This said, the study was conducted ensuring the confidentiality and well-being of the participants. Data were securely held at all times.[47]

Population

All practicing radiotherapy professionals in the radiography and physics radiotherapy workforce of the UK were invited to participate.

Recruitment strategy

A varied strategy was adopted to attract participants. The survey was publicized in the news letters of the Society and College of Radiographers (SCoR) and the Institute of Physics and Engineering in Medicine (IPEM), England, UK, and accessible via their websites over a period of 1 month (February–March 2012) (2226 SCoR therapeutic radiography members and approximately 1000 IPEM members working within radiotherapy were identified). Members (for whom an email address was available) were contacted with a link to the online SurveyMonkey questionnaire. Emails were sent to members via the professional bodies (approximately 500 for IPEM and for the 2226 SCoR). The newsletter "Synergy News" of SCoR is sent both by mail and electronically to all members. The recent member survey shows that it is read by 94% of its members.[18]

Reminders were sent via email and on the news items website. Additionally, heads of radiotherapy centres were contacted and asked to encourage staff in their departments to participate. Responses were monitored during this time, and departments with no or low responses were contacted in order to ensure some response from all radiotherapy centres. A decision was made to have an "open access" survey (accessible via the websites of relevant professional bodies to encourage responses). The project was time and financially constrained, as it was publicly funded monies through the National Radiotherapy Implementation Group radiotherapy work stream of the NHS National Cancer Action Team. This project was designed to inform ongoing work. The software did not support individual passwords, and it was felt that password protection would reduce the number of responses. Multiple responses where allowed from

a single IP address, owing to the common practice of "hot desking" in the NHS, especially among clinical and less senior staff. The likelihood and impact of "malicious" or "multiple" responses from an individual was assessed as low. Analysis of the data revealed no evidence to suggest rogue responses.

Data analyses

Likert scale scores (1, strong disagreement and 6, strong agreement with the statement) were summed to give overall scores for the scales; in the case of the JSS, this means the use of ordinal data. Ordinal data are a statistical data type, often employed in surveys, which works on an arbitrary scale, where the numerical quantity has no significance beyond its ability to rank a set of points or scores. The JSS evaluates job satisfaction on a continuum from dissatisfied to satisfied. No definitive thresholds exist for determining satisfaction, however, where there is a desire to draw conclusions regarding satisfaction *vs* dissatisfaction for groups or individuals, two approaches can be adopted; normative and absolute. There is a paucity of studies assessing burnout of the radiotherapy workforce in the UK, so there is not significant comparative norm data to draw on. Probst et al[48] employed a questionnaire design, incorporating the MBI,[37] to investigate burnout in therapeutic radiographers at six UK radiotherapy centres.

The Kruskal–Wallis (non-parametric) test was employed to analyse the variance and detect differences in the distribution of question scores between independent groups. Quantitative analysis was performed using Statistical Package for Social Science® v. 19 (IBM Corporation, Armonk, NY).

RESULTS

Responses were received from individuals from each professional group (Table 2). The percentage response rate (RR) of the population is an estimate rather than an accurate measure, although the publicized data by the SCoR and IPEM is the most reliable data; not all practicing professionals are members of their professional body, although the vast majority are.

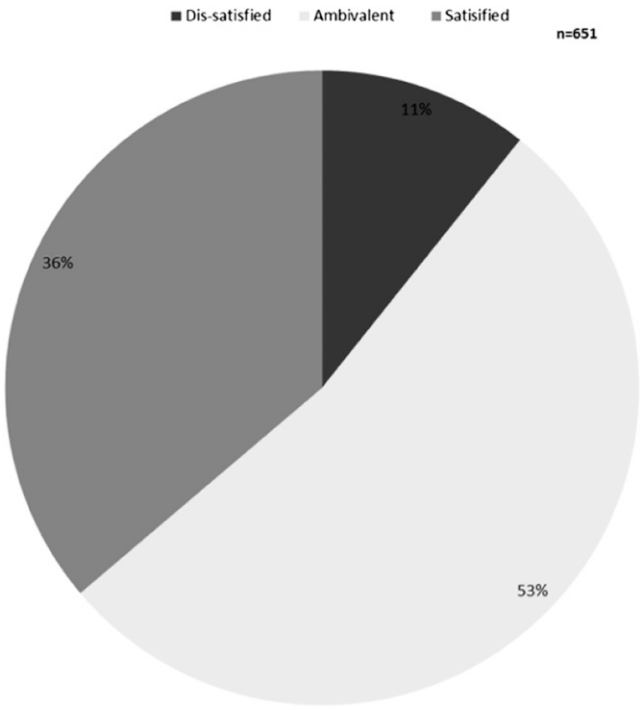
The response from AP ($n = 1$) and TAPs ($n = 2$) was not a representative sample of the approximately 85 practicing APs and TAPs in the UK. Consequently, these groups were not used for statistical comparisons with other professional groups. 20 respondents (3%) declined to give their job title/role and 33 respondents (5%) declined to name their employer. In the UK, at the time of the survey, 75 sites (59 NHS and 16 private) were identified delivering radiotherapy services, this figure includes trusts who deliver services at two or more sites and private providers at multiple sites. We received responses from 74 of the 75 sites.

Job satisfaction scale

Over half (53%) reported ambivalent levels of job satisfaction, 36% reported being satisfied and 11% were dissatisfied (Figure 1).

A statistically significant difference existed between mean JSS scores for professional groups ($p = 0.012$ and significance level, 0.05). Trainee clinical scientists were found to be the most satisfied professional group; trainee clinical scientist, 152; clinical scientist, 138.8; dosimetrist, 13.8; therapeutic radiographer, 1325; and technician/technologist, 132.1. A statistically significant difference was also evident between departments (Figure 2), with intra-organizational difference worthy of note, and reducing this variance may be an area of focus. For intra-organizational comparison, only those departments with 10 or more respondents were included for analysis.

Figure 1. Radiotherapy workforce's job satisfaction.



Individual facets of job satisfaction survey

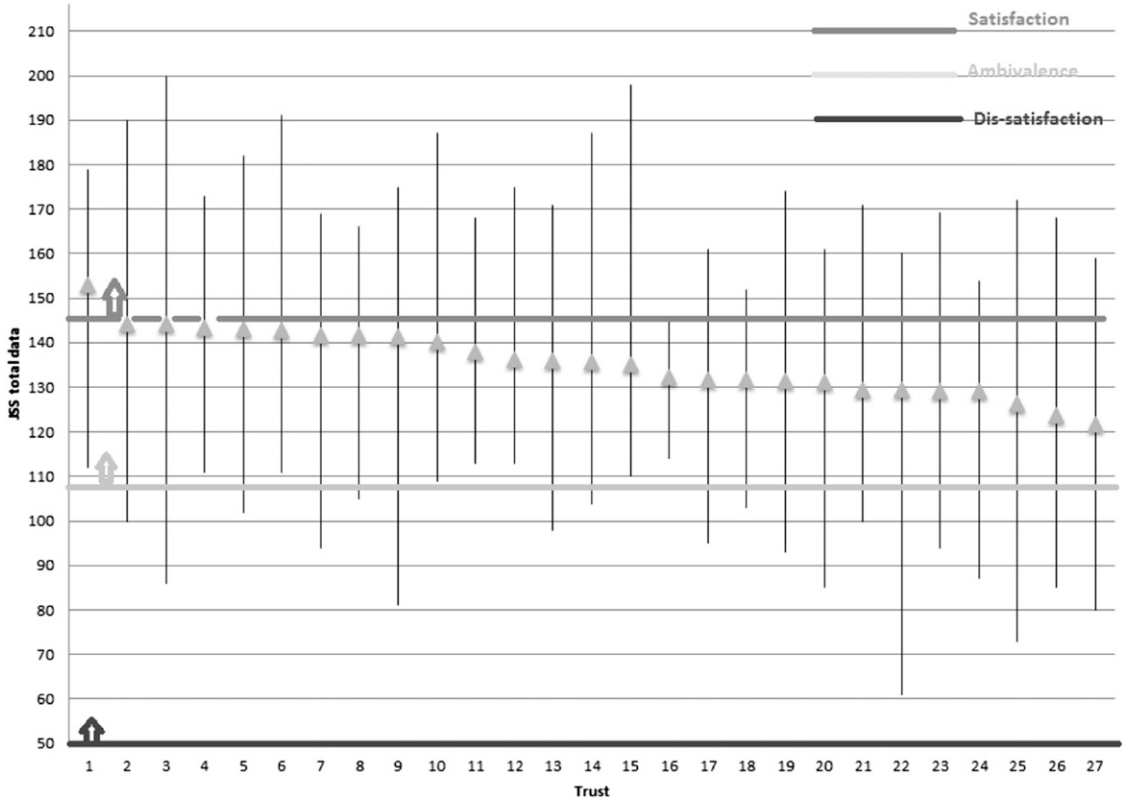
Pay was not a primary focus of this study, as it is not a facet over which individuals and service leaders have direct influence. It is, however, valuable to investigate, as remuneration is generally intrinsically linked with job satisfaction and is a facet of the JSS tool. Additionally, the majority of the workforce is within the NHS and pay is in line with the Agenda for Change (AfC) framework. The majority of the radiotherapy workforce (69.9%) felt that they are paid a "fair amount" although 72.2% felt dissatisfied with their chance of pay increases. Key areas under the influence of managers were: contingent rewards, communication, co-workers and supervision, which show a correlation with job satisfaction (Table 2).

A co-efficient of determination test or r^2 was applied to the data. This test predicts the relationship of the individual facets on job satisfaction. The closer the r^2 value is to one, the stronger the relationship. It is worth noting that r^2 is likely to be closer to zero than one, even if a relationship does exist when looking at psychology data, such as this study, owing to complex, multifaceted interactions.

Stress and burnout

The mean MBI scores for clinical respondents revealed moderate EE and PA and low DP. What is interesting is the number of all

Figure 2. Mean job satisfaction survey (JSS) by radiotherapy department (with ≥10 respondents).



clinical respondents showing high EE ($n = 138$) and low professional accomplishment ($n = 202$) (Table 3). Probst et al[48] reported high EE scores in 38% of respondents, which is concordant with the results of this survey. In the non-clinical workforce, mean scores were moderate for all three facets (Table 1), and significant levels of general exhaustion were seen with 34.5% and 29.9% scoring moderate and high exhaustion, respectively. Over a quarter (26.1%) reported high levels of cynicism, with a further 35.7% reporting moderate cynicism (Table 4).

Radiation incident reporting

Staff described an effective procedure of incident reporting with 82% stating that "staff involved in incidents are treated fairly" and 96.5% stating that departments encouraged a reporting culture. Confidentiality was a concern for a fifth of the respondents (19.8%), and 18.6% felt departments blamed or punished those involved in incidents. It is not clear from responses if accountability and action were reasonable and proportional regarding the incident reported.

Professional development

Three-quarters of respondents accessed formal, internal development opportunities. Almost one-quarter of staff had undertaken academic modules in the previous 2 years.

12% reported having not had a professional development review in the previous 12 months. A further 14.9% felt the performance development review (PDR) process was of no benefit. The majority (37.9%) felt the process was of some benefit, 24.5% felt it was fairly beneficial and just 10.6% felt it was very beneficial. Despite a significant number having undertaken a PDR (88%), <60% had a development plan.

The majority of CPD is funded by the respondent's employer, even during challenging financial times. Nearly 44% of participants' CPD was fully funded by the organization with a further 27% mainly funded by the organization. Approximately 5% found funding from other sources and 10.7% of respondents had no associated costs to their CPD.

The radiotherapy workforce is undertaking a rich and diverse range of development activities. Professional development is a statutory requirement to retain state registration and meet the code of professional conduct and is essential to learn and deliver service improvements and developments. Barriers to access development opportunities are often cited as time and financial resources, this requires individuals to be creative and proactive in recognizing and accessing development opportunities.

Absenteeism and presenteeism

In the previous 12 months, 42.3% of respondents had "attended work despite feeling unable to fulfil their role". Respondents felt pressure from themselves (81.9%), managers (48.7%) and/or colleagues (38.4%).

Workload

A majority (79.7%) reported an increase in the intensity and pace of work in the past 12 months, with a further 16.9% reporting the intensity and pace had remained the same. The

Table 3. Job satisfaction survey (JSS) data with scoring key compared with a comparative norm of nurses[34]

JSS Facet	Cronbach's co-efficient α[a]	UK radiotherapy workforce		r^2 with JSS total	US nurse (comparative norm)	
		$n = 659$			$n = 664$	
		Mean	SD		Mean	SD
Pay	0.75	12.84	4.52	0.412	12.8	2.9
Promotion	0.73	12.46	4.47	0.499	11.9☹	2.1
Supervision	0.82	☺18.46	4.78	0.448	☺17.9	2.0
Fringe benefits	0.73	13.10	2.73	0.120	14.1	3.3
Contingent rewards	0.76	13.94	4.38	0.685	13.7	2.3
Operating conditions	0.62	12.50	3.53	0.276	12.4	3.2
Coworkers	0.6	☺17.46	3.77	0.472	☺17.8	1.1
Nature of work	0.78	☺19.91	3.63	0.386	☺19.2	1.5
Communication	0.71	14.68	4.25	0.521	14.9	1.6
JSS total	0.91	135.56	23.80	1.000	134.4	12.2

[a]From Spector.[36]
SD, standard deviation

Scoring key	Dissatisfaction☹	Ambivalent	☺Satisfaction
36-item JSS total	36–108	108–144	144–216
4-item individual facets	4–12	12–16	16–24

increase was attributed to a combination of factors, such as staffing levels, lack of resources and administrative support. Over 60% of staff cites workload as "frequently preventing them from undertaking learning and development opportunities".

Respondents were asked using a free text response to indicate any factors that contribute to their workload. A common theme was that the appointment times system did not acknowledge the increased complexity and verification required for emerging techniques, with half saying "new technology" had increased workload.

> "new techniques take longer but time allocation not reflecting this"

Almost 60% cited "additional duties" such as academic study and research projects. The transition to a paperless or "paper light" environment was also cited as increasing workload.

Machine reliability and downtime was also reported as a factor negatively impacting on workload by all professional groups. The free text response suggests that, increasingly, machine quality assurance and planned preventive maintenance is done "out of hours"; this is at a time when the clinical day is commonly already extended. This combination, impacts on an individual's work–life balance.

National targets were cited as impacting on workload, particularly by managers. The radiotherapy data set, trust and national waiting time standards were seen as increasing workload. Low staffing levels were seen as a significant issue impacting on workload for 77.5% respondents. Recruiting staff is sometimes challenging owing to financial restraints, with posts frozen, and perhaps more frustratingly, recruitment processes with shared business service providers were at times problematic increasing recruitment time.

> A respondent expressed frustration that "Multiple levels of approval required to purchase equipment or recruit replacement staff", Head of Physics, AfC Band 8d.

> There was a feeling that there was an expectation to "deliver more for less" and "an increase in expectations of (senior management) in what is deliverable", RT Services Manager, AfC Band 8b.

A majority of the radiotherapy workforce (87.4%) reported working additional unpaid hours relating to their contractual commitment and commented on the impact that this has on work–life balance.

> "Hours being harder to work as I have children, childcare is only 8am–6pm, and I want to see my children not work longer and longer hours, or shifts", Therapeutic radiographer, AfC Band 6

> "Increased pressure to work unsocial hours, and lack of flexibility around childcare arrangements", Clinical Scientist, AfC Band 8a

> "There is increasing pressure to work weekends and bank holidays without consideration for the work/life balance. It

Table 4. Maslach Burnout Inventory (MBI) human services (clinical) and general (non-clinical) showing percentage of respondents scoring low, moderate and high level, with scoring key

MBI facet under investigation	Classification (%)			Mean	Standard deviation	Comparative norms	
	Low (%)	Moderate (%)	High (%)			Therapy radiographers[a]	Health professionals[b]
Human services (clinical), $n = 367$							
Emotional exhaustion	29.90	32.60	37.50	23.5	11.27	22.9	22.2
Depersonalization	72.10	19.20	8.70	4.9	5.29	7.1	7.1
Personal accomplishment	18.80	26.20	55.00	37.5	7.29	37.0	36.5
General (non-clinical), $n = 280$							
Professional efficacy	28.20	29.30	42.50	26.79	6.11	×	×
General exhaustion	35.60	34.50	29.90	12.62	7.49	×	×
Cynicism	38.20	35.70	26.10	8.67	6.63	×	×

[a]Probst et al,[48] $n = 97$.
[b]Maslach et al,[37] $n = 1104$.

MBI	High	Moderate	Low
Emotional exhaustion	≥27	17–26	0–16
Depersonalization	≥13	7–12	0–6
Personal accomplishment	0–31	32–38	≥39
Professional efficacy	≥30	24–29	0–23
Exhaustion	≥16	8–15	0–7
Cynicism	≥13	6–12	0–5

all seems to be about the service provision needs and increasingly non-urgent work is added just because staff are covering urgent work, making out of routine hours working, longer. This is also impacting on support services who do not want to routinely cover out of hours working", Therapeutic Radiographer, AfC Band 6.

DISCUSSION

The study yielded a 16% RR of the entire population, not just a sample. Although no consensus exists as to what is an acceptable or adequate RR, there are some measures that can be employed to evaluate the validity of results. Kiess and Bloomquist[49] state that an RR of 60% (of the sample) is required to account for the bias of voluntary sampling. However, survey researchers have challenged the assumption that low RRs render the results biased,[50–54] stating that greater survey participation has only minimal influence on the conclusions of the survey.[55]

Additionally, RR, in isolation, is a simplistic measure of a survey's validity. It is important to include a consideration of the representativeness of respondents. The survey got responses from 74 of the 75 sites (NHS and private providers) delivering radiotherapy in the UK. All professional groups were represented, although the response from TAPs and APs was around 3.5% of the population, despite contacting the SCoR's AP group directly.

Voluntary response sampling, as in this study, only gets responses from people who choose to volunteer. Often, voluntary response samples oversample people who have strong opinions, positive or negative, and under sample those with milder attitudes to topic of the survey. This is perhaps more complex when the survey is assessing factors that may have an impact on psychological well-being such as job satisfaction and burnout, both factors are likely to influence an individuals' motivation to complete the survey. It is difficult to say with any certainty the effect of any inherent bias from the sampling strategy. Reassuringly, the results, for both the MBI and JSS, show the full spread of data suggesting a spectrum of views were represented. Increased confidence was gained as the sample was representative of the population, that is, professional groups, hospital trusts and AfC bands.

This gives the project team confidence in the reliability of the results.

A strong relationship exists between employee satisfaction and patients' perceptions of the quality of their care; a central theme of both the Mid-Staffordshire Public Equiry[56] and subsequent Berwick report.[57] "The vast majority of staff wish to do a good job…to be proud of their work. Good people can fail to meet patients' needs when their working conditions do not provide them with the conditions for success".[57] Berwick encourages

organizations and leaders to "Make sure pride and joy in work… infuse the NHS".[57]

Job satisfaction survey

The literature reveals that organizations and leaders can significantly influence an individual's satisfaction.[58,59] Roles within radiotherapy provided a source of satisfaction for all professional groups. A minority (10.7%) reported low levels of job satisfaction; a precursor to withdrawal behaviours.[25] Withdrawal behaviours affect an organization's ability to deliver a safe and effective service.

Job satisfaction is multifaceted and is dependent on the individual, context of work and the environment. Some facets are not under the direct control of service leaders or indeed organizations, *e.g.* pay, fringe benefits and to a lesser extent promotion. The remaining facets, supervision, contingent rewards, operating conditions, co-workers, nature of work and communication, can be significantly influenced by service leaders and organizations.

A predicative factor of employee retention, satisfaction and performance is organizational commitment.[29] Focussing attention on an employee's organizational commitment will yield positive results in terms of increased retention, with associated reduced recruitment and development costs, and improved performance resulting in improved continuity of service provision for patients.

Hutton and Eddy[59] recommend a structured framework comprising a personal development plan, competency framework, mentoring and planned rotations underpinned by a culture of CPD and reflective practice. This framework acknowledges the inherent link between CPD, PDRs, job satisfaction and service development.

Recognition may be a key area for improvement; 42% of respondents felt that they do not receive "the recognition" that they deserve when they do a good job. The positive "supervision" scoring suggested lack of recognition may not be from supervisors but may be from senior managers and the organization. This could be a lack of organizational recognition especially in larger, general hospitals where radiotherapy may not be high profile. Increasing awareness and subsequently recognition of the value of radiotherapy in the treatment of cancer will be a useful tactic, especially in larger, general hospitals, capitalizing on the work of the National Radiotherapy Awareness Initiative[60] and the UK Year of Radiotherapy 2011.[61]

The clinical radiotherapy workforce is drawn to their vocational roles to make a difference, deriving "a lot of satisfaction from caring for patients"[62] and providing a quality service. Increasing workload and pace of work may yield "significant psychological strain"[63] on individuals, increasing the risk of burnout[64] and requires further investigation. Innovative interventions such as patient open evenings and telephone follow-up, may negate some of the negative effects of reduced time and contact with patients for clinical staff. Daly and Hutton[65] reported that the patient contact, removed from the pressures of the working day, was an enjoyable and valuable experience and positively influences satisfaction. Trainee clinical scientists showed the highest level of job satisfaction. There could be a number of reasons why this may be the case, for example, (1) they may be supernumerary and therefore may not have a high workload or (2) owing to training requirements, there is a tendency to be involved in a large variety of learning and development opportunities.

Maslach Burnout Inventory

The mean MBI scores appear concordant with previous measures of therapeutic radiographers and comparative norms of health professionals.[37,48] Over a third (37.5%) of clinical respondents showed high levels of EE, with 19.2% and 8.7% displaying moderate and high DP, respectively. The Francis report[56] in the UK highlighted the tragic consequences of systems failure coupled with health professionals suffering from the effects of compassion fatigue. Healthcare is hugely rewarding, and paradoxically emotionally strenuous. The combination of associated individual, interpersonal and organizational challenges are primary drivers for burnout.

It is important that managers are aware of the potential for burnout and monitor staff ensuring there are adequate mechanisms in place to avoid it developing.

Sargent et al[66] recommend that individuals have adequate resources to manage their own emotional well-being. Enhancing individuals' ability to recognize the signs and symptoms of compassion fatigue and developing professional resilience are valuable support tactics. Neurolinguistic programming (NLP) and emotional intelligence (EI) may be useful resources, to manage the negative effects of stress.[66] NLP facilitates individuals accessing resourceful states and supporting themselves, colleagues and patients. EI is the ability to recognize our feelings and those of others, and to positively manage emotions in ourselves and in our relationships.[67] Mackay et al[68] have shown that radiographers have heightened EI scores, and suggests that EI can be developed.

Professional development

Professional development is a key area to focus energy and organizational effort to positively influence job satisfaction. Focussing on people's development is associated with improved coping strategies, and managing work in new ways,[69] facilitating a less stressful and more rewarding professional life.[70] Berwick[57] encourages leaders and organizations to "foster whole-heartedly the growth and development of all staff, including their ability and support to improve the processes in which they work". Individuals need to be creative in accessing CPD opportunities. It is essential, especially during times of financial challenge, that the rich and diverse natures of CPD opportunities are exploited.

An element of career planning in PDRs and structured rotations or project work would increase equality and support development. PDRs are a vehicle that enables a manager/supervisor to define and offer support and yields a development plan with individual ownership underpinned by agreed ongoing supporting mechanisms. It can also be employed by managers as a driver to meet both departmental and organizational objectives.

Absenteeism and presenteeism

Sickness absence data is widely available, but may only tell part of the story. Perhaps more interesting and valuable data, although more challenging to quantify, is the level of presenteeism. Presenteeism is defined as the act of coming to work while the individual is not able to undertake their full duties and is concerned with the impact that this has on an individual and an organization's productivity and effectiveness. A second important consideration in the healthcare setting is the potential for errors resulting in a detriment to patients.

Staff attending work despite feeling unable to fulfil their role is a concern. Staff, on the whole, felt pressure from themselves; the origin of this pressure is not clear, although it may be the desire to not let colleagues or patients down. Another consideration is sickness and absence policies and associated factors, and this needs to be managed sensitively, for example, Bradford Factor scoring.[71] It will be valuable to review potentially conflicting policies, for example, diarrhoea and vomiting (D and V) polices, which require the professional to be up to 48 h "clear" before returning to work and absence management policies. Anecdotal evidence suggests that employees may not be complying with D and V guidance and feel pressure to attend as fear of repercussions of attendance management policies. This is a serious concern, especially given that patients receiving cancer treatment may be immune compromised.

Workload

Respondents reported that they "had too much to do". Having a realistic and appropriate workload is part of working professionally and enhances job satisfaction by positively influencing the "nature of work" as well as other MBI measures. Over 60% of staff cited workload as "frequently preventing them from undertaking learning and development opportunities". It is therefore essential to improve provision and access to cost effective and efficient development activities, which could include a lunch time journal club, mentorship programmes, attendance at tumour-specific group meetings underpinned by reflective practice and the creation of professional portfolios. As more departments move to extended days, staff are increasingly using their lunch break to relax and not think about any aspect of their work, before they resume with the heavy concentration required to plan or deliver radiotherapy to patients. Anecdotally, staff are becoming less inclined to want to commit personal time to development, as they are fatigued from their work commitments. This is despite a realization that each professional has a responsibility to maintain their competence through CPD in order to retain their eligibility for registration to practice.

Reporting of radiation incidents

The pace of work and fatigue were highlighted as potential contributing factors to radiation incidents. Roberts[72] evaluated the impact of national cancer waiting time targets on the radiotherapy workforce using semistructured interviews; and reported "pressure" and perceived safety as concerns. Lyn Wigley[73] identified fatigue and concentration as significant concerns for treatment radiographers. Further research investigating the contributing factors to incidents would be valuable to inform the design of systems of work to support workforce in delivering safe and effective practice. The Near Miss National database supported by Public Health England mirrors the positive reporting culture, with 87% of centres reporting[74] to the National Reporting and Learning System. It is a positive example of trusts encouraging reporting to help greater national learning. Berwick[57] cites systems, procedures, conditions, environment and constraints, as the primary contributing factors to incidents and also acknowledges people and culture. Supporting staff and preventing burnout will have a positive effect on absenteeism, team performance and reduce the prevalence and severity of incidents.

CONCLUSION

Burnout is an important area worthy of increased focus and attention. Over a third of respondents were suffering from EE, which is a factor not only influencing job satisfaction but also, potentially, patient care, and also maybe radiation incidents.

Individuals have a responsibility to the patients they treat and also to their colleagues and themselves, as their behaviour can positively influence everyone's job satisfaction and, potentially, the effectiveness of the team. The team can act as buffer to negate factors that adversely influence job satisfaction. A significant proportion felt they "didn't get the recognition they deserved for doing a good job". It is not clear if the perceived lack of recognition is from the trust or supervisors; however, increased recognition for individuals and teams by organizations, supervisors and colleagues is an easy win. Celebrate successes as a team, department and organization; adopting successful recognition schemes is hugely motivating. All staff would be energized and encouraged by creating a culture of catching people doing things well and celebrating success.

Job satisfaction is multifaceted, is dependent on the individual, context of work and the environment. The remaining facets of supervision, contingent rewards, operating conditions, co-workers, nature of work and communication can be significantly influenced by service leaders and organizations, and this is where energy and effort should be focused. It is a challenging and exciting period for radiotherapy in the UK; increased provision and appropriate interventions are required to achieve the aim of delivering world class radiotherapy. Retaining and developing an adequately resourced, skilled and committed workforce will be a key factor in future success.

Future work

Managers are encouraged to work with their professional bodies and share examples of best practice related to staff motivation, so that these examples can be used to support promotion of wider guidance to the professionals and service as a whole. Sharing challenges with the national professional bodies also enables intelligence and evidence to be gained in order to enable these matters to be promoted to key national stakeholders and policy makers.

Managers and service providers should be encouraged to use existing forums, such as the National Radiotherapy Service managers and the heads of radiotherapy physics network, to discuss and share best practice and enhance learning across organizations. There is also value in working locally within trusts, alongside allied health professional leads in order that

interventions are designed and implemented to respond to the local context.

It is recommended that service managers conduct regular local surveys to monitor job satisfaction levels within centres and so highlight and action any local issues to work towards improving satisfaction levels. Regular national surveys will be valuable to monitor progress, seek feedback from the professions and model beacons of best practice.

Further research investigating the contributing factors to the development of compassion fatigue and developing professional resilience would be valuable to support practitioners being satisfied within their roles and being able to deliver the highest quality care to patients.

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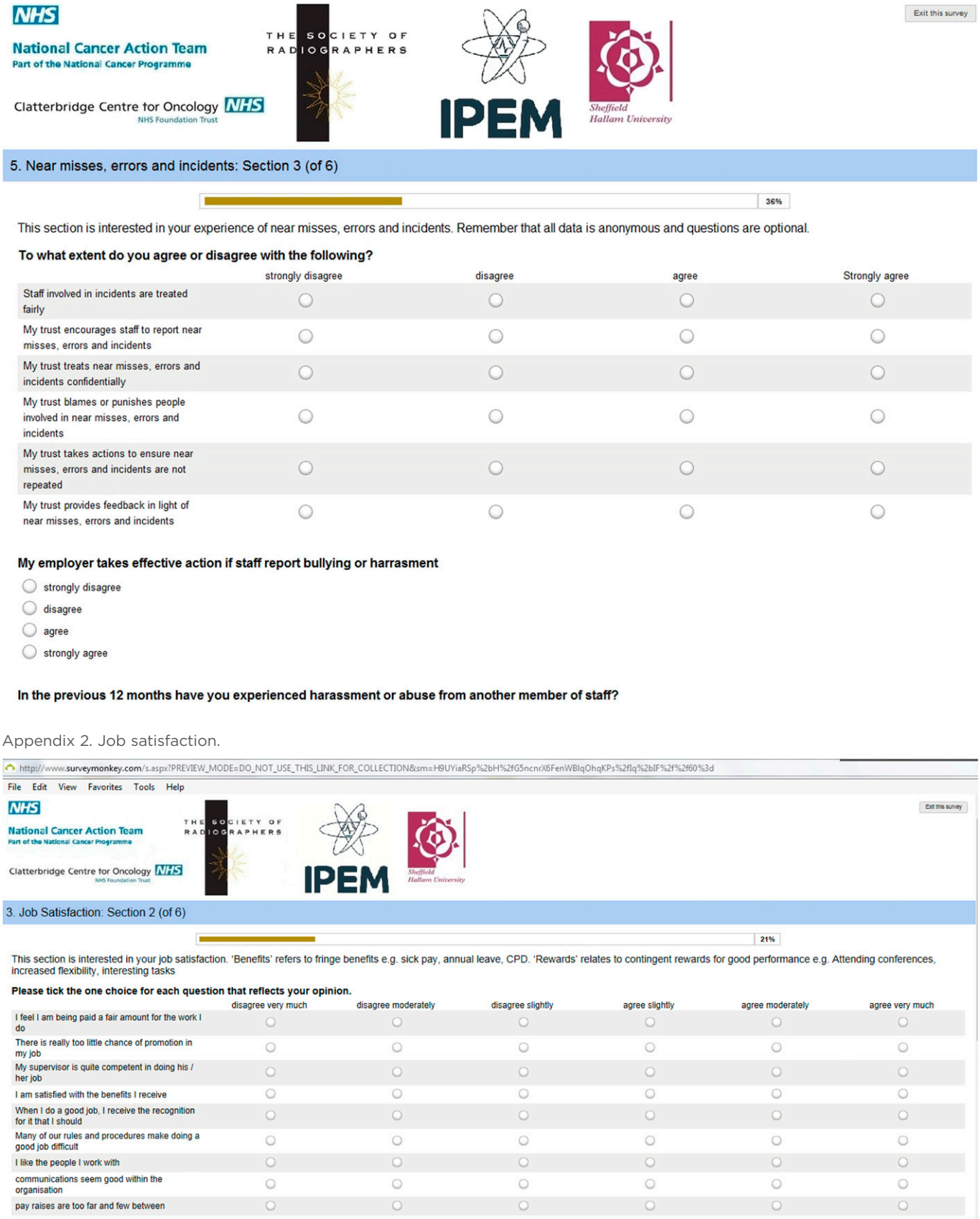
APPENDIX

Appendix 1. A sample of questions adapted from NHS staff survey.



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Clatterbridge Centre for Oncology NHS Foundation Trust
THE SOCIETY OF RADIOGRAPHERS
IPEM
Sheffield Hallam University
Exit this survey

5. Near misses, errors and incidents: Section 3 (of 6)

36%

This section is interested in your experience of near misses, errors and incidents. Remember that all data is anonymous and questions are optional.

To what extent do you agree or disagree with the following?

	strongly disagree	disagree	agree	Strongly agree
Staff involved in incidents are treated fairly	○	○	○	○
My trust encourages staff to report near misses, errors and incidents	○	○	○	○
My trust treats near misses, errors and incidents confidentially	○	○	○	○
My trust blames or punishes people involved in near misses, errors and incidents	○	○	○	○
My trust takes actions to ensure near misses, errors and incidents are not repeated	○	○	○	○
My trust provides feedback in light of near misses, errors and incidents	○	○	○	○

My employer takes effective action if staff report bullying or harrasment

- ○ strongly disagree
- ○ disagree
- ○ agree
- ○ strongly agree

In the previous 12 months have you experienced harassment or abuse from another member of staff?

Appendix 2. Job satisfaction.

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sm=H9UYiaRSp%2bH%2fG5ncnrX6FenWBlqOhqKPs%2flq%2blF%2f%2f60%3d

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3. Job Satisfaction: Section 2 (of 6)

21%

This section is interested in your job satisfaction. 'Benefits' refers to fringe benefits e.g. sick pay, annual leave, CPD. 'Rewards' relates to contingent rewards for good performance e.g. Attending conferences, increased flexibility, interesting tasks

Please tick the one choice for each question that reflects your opinion.

	disagree very much	disagree moderately	disagree slightly	agree slightly	agree moderately	agree very much
I feel I am being paid a fair amount for the work I do	○	○	○	○	○	○
There is really too little chance of promotion in my job	○	○	○	○	○	○
My supervisor is quite competent in doing his / her job	○	○	○	○	○	○
I am satisfied with the benefits I receive	○	○	○	○	○	○
When I do a good job, I receive the recognition for it that I should	○	○	○	○	○	○
Many of our rules and procedures make doing a good job difficult	○	○	○	○	○	○
I like the people I work with	○	○	○	○	○	○
communications seem good within the organisation	○	○	○	○	○	○
pay raises are too far and few between	○	○	○	○	○	○