Clinical training in China needs to be improved: A cross-sectional study of MD graduates

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Abstract

Background: China is experiencing medical education reform to construct national quality standards, modernise and standardise health professionals, and advance health delivery system requirements. Graduate medical education (GME) is being piloted as a merger of Doctor of Medicine (MD) and PhD programs to improve academic research and clinical training. However, the academic degree-centred system has led to a preoccupation with academic research rather than clinical training. Quality information regarding the clinical training of MD graduates from Chinese medical schools is lacking. This general investigation aims to provide an overview from the perspective of recent MD graduates in China.
  Methods: Self-reports on MD clinical training were obtained from 432 MD graduates in 2017 via an online survey. The reports included information on overall satisfaction, educational supervision, supervised learning events, curriculum coverage, local teaching, teamwork, educational governance, workload, supportiveness of the environment, feedback, clinical experience, patient safety, handovers, and reporting systems. Descriptive analysis was used to summarise the outcome.   Results: Of the 432 MD graduates surveyed, only 37.4% reported satisfaction with the overall clinical training quality; 54.6% rated the informal and bedside quality as "good"; 64.4% reported that they knew who provided clinical supervision; only 35.5% highly rated the quality of clinical supervision; 51.8% reported that they judged senior physicians as "not competent"; 48.1% believed that their concerns about education and training would be addressed; 41.9% agreed that the staff treated each other respectfully; 97.4% admitted that they worked beyond the mandatory hours and claimed they were regularly short of sleep; 84.2% raised concerns about patient safety; 45.3% reported that they received regular informal feedback. Conclusions: This study suggests that the quality of clinical training for MD graduates needs to be improved; however, even though most participants seemed satisfied with their clinical training. The overall satisfaction with the teaching quality was acceptable, whereas the quality of many clinical training aspects was scored poorly. Each aspect may encourage a deeper investigation into the understanding of causes and possible remediation. Some suggestions include improving safe and effective care, providing positive clinical supervision, offering appropriate practice opportunities, providing health care services, and maintaining optimal patient safety.

Background

Healthcare professionals must continue to deliver optimal clinical practice to improve patient outcomes. Inadequate clinical practice relates to the current doubled reforms of higher education and health care systems. Seven government ministries have jointly launched standardized residency training (SRT) as a national strategy in China [1]. In recognizing the gap in medical education between China and developed countries, China is experiencing medical education reform to construct national quality standards, modernize and standardize health professionals, advance health delivery system requirements, and meet the health demands of the Chinese public. Physician-scientists play important roles in medical education, research and clinical practice [2], "Physician-scientist" describes a physician who devotes much more time

to clinical practice than to academic research and who is committed to the quest for new knowledge and approaches to diagnose, treat and prevent disease [3].

China is producing world-class physician-scientists who are competitive with international standards. Graduate medical education (GME) is being piloted to merge MD and PhD programs at some super universities to improve academic research and clinical training. This training program provides integrated academic and clinical training of Doctor of Medicine (MD) graduates. Understanding medical degrees may be difficult, and China has built an unique degree and credentialing system compared with other countries, especially during the rapidly changing start-up phase in 2013 to 2020. China has adopted an ambitious plan to improve the quality of its physicians. By the end of 2014, the SRT under the National Health and Family Planning Commission (NHFPC, formerly the Ministry of Health) and the Ministry of Education (MoE) reformed medical degree program [1]. This normal model mandates 5 years of undergraduate study (Bachelor of Medicine), followed by 3 years SRT (Master of Medicine, MM), and X years of standardized subspecialty training (SST) (Doctor of Medicine, MD), called "5+3+X". The X years of MD program is controversial in China. The average training length of MD-PhD graduates has increased from 1980 (6.5 years) to today (8.0 years) [3] in the US. MD-PhD programs at most US and a few Canadian medical schools, incorporate 2 years in medical school, 4 years in the PhD degree, another 2 years in medical school to complete the MD degree [3].

The main purpose of MD-PhD programs in medical education in developed countries is to train qualified practitioners rather than to train those who focus only on academic research. Therefore, an ideal GME system is more ambitious in China - as it combines clinical training and academic research. In 1956, Western Reserve university in the US launched the integrated MD-PhD program [4], highlighting flexible and self-directed learning. The difference between models in China and the US is that the SRT and SST are involved with the medical degree. By distinguishing doctors' professional degrees from researchers' academic degrees, MM graduates must undertake SRT training, and MD graduates must undergo SST training. GME reform requires completing a combination of SRT training and MM. MM graduates obtain both an MM degree and certificate of SRT[1]. The combination of MD-PhD graduates (called an MD program in this study) is the highest level of medical education, which is a critical pathway to cultivating next-generation physician-scientists in China [5]. MD graduates are criticized for concentrating primarily on academic research, and their clinical practice training is inadequate [6]. This academic degree-centered system has led to a preoccupation for research rather than clinical training in China.

Medical Scientist Training Program (MSTP) train physician-scientists, they play crucial roles in medical research and education [7], enhances science in medical education in the US, which integrated MD-PhD

training in the context of dual-degree [4]. MD graduates will be future physician-scientists in China and worldwide. These graduates make important contributions to basic and medical research and contribute to most research and publications. Although clinical training is a core competency to be a physician-scientist, the goal of the MD [8] is to cultivate scientific research and academic competency in China. Concerns have been raised regarding the current clinical competency of MD graduates who have deficits in clinical practice compared with those of peer physicians [9], although changes have been made to develop new training similar to that of original well-educated, developed countries.

To date, comprehensive quality data regarding clinical training of MD graduates are unavailable in China. To cultivate sustainable physician-scientist, their clinical training must be pictured . This study investigated the clinical training of MD graduates, examined crucial evidence to improve MD cultivation quality, and explored cultivation trends in GME to contribute to policy considerations to drive the GME. This study may help identify optimal clinical training and pinpoint the areas that fail to meet standards. This study provides insight into the different areas of clinical training as experienced in different contexts. The obtained data enabled addressing the issues raised in evaluating the MD program.

Methods

Participants

This study was a cross-sectional study using a self-report questionnaire to evaluate clinical training of MD graduates. The inclusion criteria included participants studying in different disciplines and training stages and participants who were interested in this study. Purposive sampling was conducted [10], and based on the pilot study, the calculated sample size was 341. Fifteen participants, who were representative of the target population completed the pilot study. We attempted to achieve as much diversity as possible in research size and medical schools and sent a questionnaire requesting data collecting to the administrators at a medical education conference. MD graduates were defined as those studying at the time that this research was conducted; 432 MD graduates agreed to participate using informal student organizations from 1 January to 1 March in 2017 via an online survey. As compensation, participants received and incentive worth ￥10.00 on the website.

Data collection

The questionnaire was modified from the General Medical Council (GMC) National Trainee Survey [11], which monitors the quality of clinical training and education of doctors in the UK [12], and includes basic information and the indicators 'overall satisfaction', 'adequate experience', 'workload', 'clinical supervision', and 'educational supervision'. The questionnaire comprehensively evaluated the quality of clinical practice. Two bilingual researchers translated the initial questionnaire from English to Chinese

using the translation-back technique based on literature review. Discrepancies between the original English and back-translated Chinese version were discussed among the bilingual researchers until they reached a consensus regarding the linguistic and cultural equivalence. The questionnaire was pretested on 10 participants in advance to make sure that it was easily understood. The questionnaire was reviewed and validated by 9 experts, and the inclusion criteria included experts working in different Chinese GME disciplines and MD supervisors who were interested in the study and willing to participate. We used the H coefficient and Cronbach's alpha to assess internal reliability (Cronbach's alpha =0.78).

The 11 components of the final questionnaire focused primarily on clinical training and included demographic data (gender, age, working time, professional title, living situation), overall satisfaction, educational supervision, supervised learning events, curriculum coverage, local teaching, teamwork, educational governance, workload, supportive environment, feedback, clinical experience, patient safety, handover and reporting systems. Response formats included multiple choices with three to six options, yes/no responses, Likert-type scales and open-ended questions.

To improve responses and obtain the target number of participants, participants completed the questionnaire via computers or smart devices. If participants attempted to move to the next question without answering the current question, a warning popped up and they were directed back to the unanswered question. The IP address helped identify and eliminate duplicates. Responses were examined for indications of systematic response bias (e.g. clicking the same response option to move rapidly through the questionnaire).

Potential participants were given an electronic summary of this study, detailing the research aim, procedure, expected outcomes, risks, benefits and their rights not to participate. We recruited all participants online; the first page of the online questionnaire was the study guidance, all data were anonymized with regards to data protection and storage of personal data [13]. This study received ethical approval, and informed consent was provided after study guidance. All participants signed informed consent forms online.

Statistical analysis

The data were analyzed using Microsoft Excel 2016 (Microsoft Corporation, Redmond, Washington, USA) for windows. Descriptive analysis (mean, standard deviation and percentages) was used to quantify the responses and summarize the outcome variables.

Results

The participants' mean age was 28± 3.6 years, with 58.4% aged between 26 and 30 years; 54.4% got married, 64.0% were men, 24.9% stated that they never had a job, 69.5% obtained professional MM degrees, and 88.9% obtained SRT certificates. Of 45.4% reported that they received informal feedback from senior physicians at least once on a monthly; 22.6% responded "never"; 51.8% reported that they had received feedback about their progress from their educational supervisors; 37.7% did not consider their feedback was useful; 32.6% admitted that they had received useful formal assessments of performances in the workplace; 61.2% agreed on educational objectives with their educational supervisors; and 64.4% admitted they had a training agreement with their educational supervisors, which set their respective responsibilities. Furthermore, 84.2% had raised concerns about patient safety, and 74.4% reported their concerns had been resolved or were being addressed.

Figure 1 (table 1) shows that 37.4% of participants were satisfied with the overall quality of clinical training; 61.2% believed an MD career would ensure that they acquired the competencies they needed, and 64.4% agreed an MD career would be useful for their future career.

Figure 2 (table 1) shows that 57.9% agreed or strongly agreed that "my organization encourages teamwork culture between multidiscipline healthcare professionals"; 67.7% reported the same about the teamwork culture between clinical departments; 54.7% were confident they would receive help if they turned to other departments; 41.8% agreed or strongly agreed with the statement "I am confident that I know how to raise a concern about my education and training". When they raised concerns about the education and training, 48.1% believed the concerns would be addressed; 54.9% agreed or strongly agreed with the statement that "I know how or could find out how to escalate such a concern if I felt it wasn't being addressed"; 70.8% agreed or strongly agreed the training environment was fully supportive; 29.1% agreed or strongly agreed that staff was always treated fairly; 41.9% agreed or strongly agreed that staff treated each other with respect; and 41.9% obtained support to build confidence in the training environment. When they disagreed with senior physicians, 38.6% reported that their views would be treated openly, and 54.7% reported they knew who to approach if they had personal or training concerns.

As shown in Figure 3 (table 1), 80.7% agreed supervised learning events (SLEs) made them reflect on clinical practice; 77.5% agreed SLEs had helped them to identify and develop clinical practice gaps; 80.7% were confident SLEs enabled them to improve clinical practice; 61.2% reported it was easy to obtain SLEs from proper physicians; 64.4% reported they could contact with onsite senior physicians at all times; and 67.7% agreed that senior physicians could advise on any clinical situation. Regarding curriculum coverage, 51.39% were confident that it would meet their cultivation objectives related to professional experience (leadership, teaching, research, and quality improvement), and 48.14% agreed that an MD

career would meet their cultivation objectives in their clinical practical experience for procedures and treatments, with 54.65% reporting the same on clinical experience.

As Figure 4 (table 1) shows, 74.19% agreed or strongly agreed that handover arrangements always ensured continuity of patients care between shifts; 74.2% agreed or strongly agreed handover arrangements between departments; 64.4% agreed or strongly agreed that appropriate multidisciplinary members were included in handover; 67.5% were aware of how to report patient safety incidents and near misses; 51.4% reported a culture of proactively reporting concerns; 67.4% reported a culture of learning lessons from concerns raised; 64.2% were confident that concerns were effectively dealt with when concerns raised; and 64.2% believed the subsequent actions were fed back appropriately.

Figure 5 (table 2) shows that 64.4% rated the local or departmental teaching quality as "good" or "excellent"; 54.7% rated the clinical teaching quality including informal and bedside as well as formal; 35.6% rated the clinical supervision quality as "good" or "excellent"; 64.4% reported that they knew who provided clinical supervision when they were working; 32.1% rated the clinical experience quality as "good" or "excellent"; and 45.1% rated the practical experience as "good" or "excellent".

As Figure 6 (table 3) shows, 51.9% reported being supervised by incompetent senior physicians, with 39.0% reporting that this phenomenon happened at least monthly; 26.0% responded that they felt forced to cope with clinical problems beyond their competence or experience weekly or daily; 77.2% reported being expected to obtain consent for procedures where they did not understand the risks of the proposed intervention. All participants admitted they worked out of hours including night shifts and weekends. All claimed they were short on sleep while at work in their current working pattern, and 35.6% reported they felt short of sleep on a daily basis, while 38.6% reported this occurring weekly.

Discussion

To our knowledge, this is the first analysis to explore the quality of clinical training among Chinese MD graduates from a range of specialties and different stages and included foundation, core and specialty clinical training. This study indicated that MD graduates were a young group with primary titles, and most had experienced short-term clinical training before entering MD program. The quality of overall satisfaction, training environment, feedback, clinical experiences, clinical teaching and supervision should be improved. During challenging times, it would be deeply concerning and understandable to evaluate the quality of clinical training that MD graduates received as well as what would be necessary to sustain the cultivation pathway.

Clinical training challenges

GME reform is backed by substantial public financing because of the uniqueness of the Chinese medical education context. Change is extremely challenging to implement, and imbalances exist between public expectation, rapid economic and social development, and the lagging medical education. China has recently strengthened the coordination between the NHFPC and the MoE, but achieving coordination with finance, human resources, and civil affairs is difficult. The State Commission Office for Public Sector Reform (SCOPSR) and the government ministries have many mixed and complicated characteristics in China, such as the household registration system, the general workforce, employment, and income management. To improve the sustainable quality of clinical training and the roles of professional development, administration power should be clarified and strengthened. Some piloted reform is being launched in some super universities, such as those in Beijing and Shanghai, but some medical education resources are not replicable at other universities, such as hospital training quality and qualified clinical preceptors and graduates. Clinical training focuses on patient care and cooperation with patients, family members, physicians, and other health professionals. The different care settings affect overall satisfaction. Policy makers should issue policies and regulations, as professional bodies have not been actively in ensured clinical training quality across different universities.

This study identified some challenges in clinical training that must be addressed. Technological innovation should be promoted across health care system, and the quality of clinical training is substantially below the standard. Most MD graduates are broadly accepting of the clinical training they received; however, they lost training time and support. The criticisms concern the length of clinical training and low compensation. MD–PhD programs in the US and institutional, federal, and societal programs provide full tuition and a stipend to support their graduates' training [3]. A pragmatic alternative is to combine the degree and clinical training, although clinical competency is inherently associated with academic research. MD graduates desire high quality and effective clinical training, which does not align perfectly with academic competency.

MD graduates have remained silos of professional practice with little horizontal professional mobility or quality assurance. Clinical competency of Chinese physicians is often judged, even for those with higher academic degrees, due to the demands for academic degrees and a lack of well-established clinical training and teaching. MD graduates are challenged by interruptions in their clinical training [2]. MD graduates face high demands of academic research than clinical training. MD graduates do not receive the optimal combination of clinical training and academic research in China [14], Normally, one detrimental graduation condition is to publish English papers in journals with high impact factors. Every MD graduate must complete a great deal of research, thus losing clinical training time. In this study, MD graduates stated that they needed more support in balancing clinical training and academic research. The boundary

was unclear, and MD-PhD programs in the US encourage integrating clinical and academic training. Academic research training has been neglected in the US [6], another study reported that graduates from 24 MD-PhD programs spent 75% to 80 % of their time conducting academic research [3].

Physicians with higher degrees were more likely to find higher paying job in a higher level hospital and a larger size city where they could also obtain high-quality and organized clinical training associated with medical career progression and future income. Therefore, very few MD physicians serve in rural areas [3], which is consistent with the results of this study. A considerable proportion of Shanghai master trainees dropped out of the SRT to enter the MD program. A doctorate degree is more attractive than an SRT certificate [1]. Without a valid 3-year MM with SRT, graduates cannot enter 'X' or an MD program. MD graduates normally must attend an examination organizing by universities and have a curriculum vita and expert recommendation letters. After passing examination, candidates are interviewed by an expert panel, included supervisors. The admission for MD graduates gradually transfers to the application, with no entrance examination. These silo positions are extremely competitive, to ensure fairness, the US's Medical College Admission Test (MCAT) is validity for admission [16].

Most MD graduates had job experiences in this study, which was inconsistent with MD-PhD students in the US [3], however, professionalism was insufficient [17] and needed improvement [18]. Inadequate instructional abilities and professionalism of preceptors were commented on frequently by MD graduates, which was consistent with a study in the US [2]. This study showed that clinical training of MD graduates requires urgent improvement, especially of supervision and feedback. Poor levels of clinical supervision made an unsafe and unsupportive clinical environment, and improper clinical supervision may impact patient safety and health outcomes. Although MD graduates expressed satisfaction with preceptor quality, it seemed that the levels of preceptors were proper. This study indicated the importance of highlighting clinical supervision and raised concerns about frequent and effective feedback. Clinical training environments present challenges, such as patient care and multidisciplinary, pressures about clinical training and supervision [19]. We must acknowledge the pressures in health care service across China and understand that preceptors are experiencing similar pressures, raising concerns about the balance between clinical training and routine clinical work [20]. Our responsibility is to protect, enhance and recognize the critical statuses of preceptors, and we must support preceptors consistently. MD graduates and preceptors are working together to improve health care services, we must make it clear that medical education is a priority. Health care service provision and medical education are inextricably linked, and a lack of training opportunities and a busy working environment influence patient safety and care. Another important area to explore is the health and wellbeing of MD graduates and growing concerns about the impact of the working environment on individuals. Pressure can lead to burnout and negatively impact

mental health. We did not obtain the dropout rate of MD graduates in this study. This rate was approximately 3% to 34% in a study in the US [3].

Recommendations for improvement training in clinical practice

Sorting through these challenges unique to China will take time. How can we ensure cultivation quality in combination an MD degree with SST? Complicated clinical environments challenge contemporary clinical training, emergency patient care, advanced technology, and multidisciplinary cooperation for mentoring [19]. Accreditation of SRT and SST training institutions is essential. China is constructing and following the medical education systems of developed countries. The Chinese Medical Doctor Association (CMDA) has been designated to manage accreditation. Within a very short period, the CMDA has accredited approximately 500 training bases geographically [1]. This crucial work may need to be strengthened with regard to professional expertise, acceptance of its authority, and financial resources. MD graduates in the US obtain funding to support doing laboratory-based research [3], which is inconsistent with China. Most conduct clinical research and obtain research funding from their supervisors, which might limit their research interests and delay the time they conduct independent research. The standards of SRT and SST cannot satisfy the clinical competencies of MD graduates. High-quality professional expertise is only presented in a few top hospitals; therefore, a new certification mechanism must be established [1]. Moreover, with the support of China Medical Board (CMB), seven leading teaching hospitals of these 24 demonstration bases have just developed the China Consortium of Elite. Medical education reform is led by government. Does the reform depend upon capacity building of Chinese professional associations in the future?

The questionnaire comments provided recommendations for improving the MD program. Most MD graduates appreciated the MD program and stated that the strengths were that combining the SST with the degree saves time, and they obtained a range of clinical cases and experiences. However, the quality of the clinical training remained the most important point, regarding whether MD graduates achieved clinical training standards, and whether the MD program was safe and supportive for MD graduates, preceptors and patient care. The educational culture should be caring, compassionate and provide optimal patient care, value and support. Educators, researchers and administrators should pay close attention to those who disagreed with the cultivation responsibilities of MD graduates, and preceptors should be selected, inducted, trained and appraised to reflect clinical training. They should receive support, resources and time to meet cultivation responsibilities. MD graduates stated their preceptors lacked the time to supervise, and policies should support them in completing their clinical training plans optimally. We integrated some suggestions, including improving safe and effective care, positive clinical supervision, appropriate practice opportunities, providing health care services and maintaining optimal patient safety in challenging times.

Implications for MD program next development

Knowing the clinical training status characteristics could help predict and prevent problems at an earlier stage. Policy makers should cooperate with stakeholders before the quality worsens and causes harm to clinical training and patient care. We should actively consider more effective recommendations in this critical area. All training hospitals depend on local conditions and must have the approval and the capacity to support clinical training of MD graduates, which would help them develop adequate competencies and maintain optimal clinical training. Policy makers should reflect current clinical training to provide and refine sustainable guidance to assist MD preceptors, work with preceptors to improve where necessary, and consider more flexible clinical training program. The training standards should outline how MD graduates can be treated more professionally at all training stages and individualize clinical training components [6].

MD graduates receive lengthy training and inadequate funding support China. In the US, medical students receive public and private funding for year-long research opportunities [21]. To design subspecialties and their respective lengths based on existing SRT specialties, monitoring, evaluation and integration of an SST with an MD must be researched systematically and sustainably. Our mission is to provide a supportive and sustainable training environment. Recommendations that maybe impactful include (a) targeted funds or rewards for academic and clinical training; and (b) a supervising team to guide clinical training. A clinical scientist committee should be established to help overcome challenges at various training stages [22], especially funding, individual training, supervision and feedback [23].

Overall, MD graduates do not receive the optimal combination of clinical training and academic research. Supervision and feedback on clinical training for MD graduates must be improved. A few top hospitals present high-quality professional expertise. A new certification mechanism must be established. Policy makers should pay close attention to those who disagree with the cultivation responsibilities of MD graduates. Preceptors should be selected, inducted, trained and appraised to reflect clinical training. Some suggestions included improving safe and effective care, positive clinical supervision, appropriate practice opportunities, providing health care services and maintaining optimal patient safety in challenging times. Current clinical training should provide refined and sustainable guidance to improve where necessary.

Limitations

This cross-sectional study was based on purposive   sampling and self-reported. The findings were limited by a small sample size, which may restrict generalizability; therefore, a national cohort study is needed. We suggested that in-depth and national clinical training cohort studies should be conducted yearly. All comments were from open-ended questions, and interviews were not conducted. This must be engaged in future studies. This study investigated clinical training independently from academic research. Optimal integrated clinical training and academic aspects should be develop next.

Conclusions

This study presented a complex clinical training picture of MD graduates, identified the poor training standards of MD graduates, highlighted that preceptors needed to be raised, and revealed that clinical training must be improved. Most MD graduates were satisfied with the clinical training they received, but the quality of the overall satisfaction, training environment, feedback, clinical teaching and supervision should be improved. Each of these aspects may enable a deeper understanding of the causes and possible remediation. We should commit to creating a supportive training environment and developing strategies to balance academic research and clinical training for MD graduates to ensure that both MD graduates and preceptors receive the best support.

Abbreviations

GMC: General Medical Council; GME: Graduate Medical Education; CMB: China Medical Board; CMDA: Chinese Medical Doctor Association; MCAT: Medical College Admission Test;

MD: Doctor of Medicine; MM: Master of Medicine; MoE: Ministry of Education; MSTP: Medical Scientist Training Program; NHFPC: National Health and Family Planning Commission, formerly the Ministry of Health; SCOPSR: State Commission Office for Public Sector Reform; SLEs: Supervised Learning Events; SRT: Standardized Residency Training; SST: Standardized Subspecialty Training.

Declarations

Ethical approval and consent to participate

Human participant approval was approved by the institutional review board of Xuzhou Medical University (Number: 201568). Participants provided signed consent.

Consent for publication

Not applicable.

Availability of data and material

The datasets that support the findings of this study are available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

XNZ contributed to study conceptualization; data collection, analysis, and interpretation; and original draft, review and editing the manuscript.

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Tables

Table 1 Overall satisfaction, adequate experience, teamwork, educational governance, supportive environment, curriculum coverage, supervised learning events, handover and reporting systems (n=430)

Overall satisfaction and adequate experience	Strongly agree, n (%)	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Strongly disagree, n (%)	
I am satisfied with the quality of training in clinical practice.	84 (19.53)	77 (17.91)	54 (12.56)	167 (38.84)	48 (11.16)	
I am confident that MD career will help me acquire the competencies I need at my current stage of training.	26 (6.04)	237 (55.12)	112 (26.05)	55 (12.79)	0 (0.00)	
This post will be useful for my future career.	54 (12.56)	223 (51.86)	126 (29.30)	27 (6.28)	0 (0.00)	

Teamwork, educational governance and supportive environment	Strongly agree, n (%)	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Strongly disagree, n (%)	NA, n (%)
My organization encourages teamwork culture between multidiscipline healthcare professionals.	54 (12.56)	195 (45.35)	181 (42.09)	0 (0.00)	0 (0.00)	0 (0.00)
My organization encourages teamwork culture between clinical departments.	67 (15.58)	224 (52.09)	125 (29.30)	14 (3.26)	0 (0.00)	0 (0.00)
If I asked for help from outside my department, I'm confident I would receive it.	68 (15.81)	167 (38.84)	125 (29.07)	56 (13.02)	14 (3.26)	0 (0.00)
I am confident that I know how, or could find out how, to raise a concern about my education and training.	54 (12.56)	126 (29.30)	166 (38.60)	56 (13.02)	14 (3.26)	14 (3.26)
If I were to raise a concern about my education and training, I'm confident it would be addressed.	54 (12.56)	153 (35.58)	181 (42.09)	28 (6.51)	14 (3.26)	11 (2.56)
I am confident that I know how, or could find out how, to escalate such a concern if I felt it wasn't being addressed.	55 (12.79)	181 (42.09)	139 (32.33)	41 (9.53)	0 (0.00)	14 (2.69)
The training environment is fully supportive.	109 (25.35)	196 (45.43)	83 (19.30)	14 (3.26)	28 (6.51)	0 (0.00)
Staff is always treated fairly.	14 (3.26)	111 (25.81)	180 (41.86)	98 (22.79)	27 (6.28)	0 (0.00)
Staff always treats each other with respect.	28 (6.51)	152 (35.35)	153 (35.58)	97 (22.56)	0 (0.00)	0 (0.00)
The training environment is one that fully supports the confidence building of physicians in training.	28 (6.51)	152 (35.35)	181 (42.09)	41 (9.53)	14 (3.26)	14 (3.26)
If I were to disagree with senior physicians, they would be open to my opinion.	13 (3.02)	153 (35.58)	181 (42.09)	55 (12.79)	14 (3.26)	14 (3.26)
If I had any concerns (personal or educational) I would know who to approach to talk to in confidence.	41 (9.53)	194 (45.12)	153 (35.58)	42 (9.77)	0 (0.00)	0 (0.00)

Curriculum coverage and supervised learning events						
I'm confident that this post will give the opportunities to meet cultivation objectives in: PROFESSIONAL EXPERIENCE (leadership, teaching, research, and quality improvement etc.)	41 (9.53)	180 (41.86)	181 (42.09)	28 (6.52)	0 (0.00)	0 (0.00)
I'm confident that this post will give the opportunities to meet cultivation objectives in: PRACTICAL EXPERIENCE (procedures and treatments of chest drains, passing NG tubes, minor surgeries under local anesthetic, biopsies,	40 (9.30)	167 (38.84)	181 (42.09)	42 (9.77)	0 (0.00)	0 (0.00)

fitting coils, injections, psychological therapies etc.)

Statement						
I'm confident that this post will give the opportunities to meet cultivation objectives in: CLINICAL EXPERIENCE (examination skills, taking a history, deciding investigations and management, seeing a variety of patients in different settings etc.)	68 (15.81)	167 (38.84)	195 (45.35)	0 (0.00)	0 (0.00)	0 (0.00)
Supervised learning events (SLEs) have led to me reflecting on my clinical practice.	83 (19.30)	264 (61.40)	83 (19.30)	0 (0.00)	0 (0.00)	0 (0.00)
SLEs have helped me to identify areas in which I need to develop.	69 (16.05)	264 (61.40)	97 (22.56)	0 (0.00)	0 (0.00)	0 (0.00)
SLEs have enabled me to improve my practice.	69 (16.05)	278 (64.65)	69 (16.05)	14 (3.26)	0 (0.00)	0 (0.00)
How easy or difficult was it to get a suitable physician to complete an SLE with you?	27 (6.28)	236 (54.88)	139 (32.33)	28 (6.51)	0 (0.00)	0 (0.00)
I have access to a senior physician who is onsite at all times.	27 (6.28)	250 (58.14)	153 (35.58)	0 (0.00)	0 (0.00)	0 (0.00)
The senior physician onsite could advise on any clinical situation.	41 (9.53)	250 (58.14)	111 (25.81)	28 (6.51)	0 (0.00)	0 (0.00)

Handover and reporting systems

Statement						
Handover arrangements always ensure continuity of care for patients between shifts.	109 (25.35)	210 (48.84)	83 (19.30)	28 (6.52)	0 (0.00)	0 (0.00)
Handover arrangements always ensure continuity of care for patients between departments.	151 (35.12)	168 (39.07)	97 (22.56)	14 (3.26)	0 (0.00)	0 (0.00)
Appropriate members of the multidisciplinary team are included in handover.	110 (25.58)	167 (38.84)	111 (25.81)	28 (6.51)	14 (3.26)	0 (0.00)
I have been made aware of how to report patient safety incidents and near misses.	69 (16.05)	221 (51.40)	84 (19.53)	14 (3.26)	0 (0.00)	42 (9.77)
There is a culture of proactively reporting concerns.	69 (16.05)	152 (35.35)	167 (38.84)	0 (0.00)	0 (0.00)	42 (9.77)
There is a culture of learning lessons from concerns raised.	124 (28.84)	166 (38.60)	98 (22.79)	14 (3.26)	0 (0.00)	28 (6.51)
I am confident that concerns are effectively dealt with.	110 (25.58)	166 (38.60)	112 (26.05)	14 (3.26)	0 (0.00)	28 (6.51)
When concerns are raised, the subsequent actions are fed back appropriately.	96 (22.33)	180 (41.86)	98 (22.79)	28 (6.51)	0 (0.00)	28 (6.51)

Table 2 Clinical experience, clinical supervision, local teaching and overall satisfaction (n=430)

	Excellent, n (%)	Good, n (%)	Fair, n (%)	Poor, n (%)	Very poor, n (%)
How would you rate the quality of the local/departmental teaching?	40 (9.30)	237 (55.12)	97 (22.56)	56 (13.02)	0 (0.00)
How would you rate the quality of teaching (informal and bedside teaching as well as formal and organized sessions)?	27 (6.28)	208 (48.37)	181 (42.09)	14 (3.26)	0 (0.00)
How would you rate the quality of clinical supervision?	14 (3.26)	138 (32.09)	223 (51.86)	55 (12.79)	0 (0.00)
How would you rate the quality of clinical experience?	54 (12.56)	84 (19.53)	237 (55.12)	55 (12.79)	0 (0.00)
How would you rate the practical experience you were receiving?	54 (12.56)	140 (32.56)	209 (48.60)	27 (6.28)	0 (0.00)

Table 3 Feedback frequency, clinical supervision and workload (*n*=430)

Feedback frequency	Daily, *n* (%)	Weekly, *n* (%)	Monthly, *n* (%)	Less than once a month, *n* (%)	Never, *n* (%)	
How often (if at all) do you receive informal feedback from senior physicians about your performance?	28 (6.51)	125 (29.07)	42 (9.77)	138 (32.09)	97 (22.56)	
clinical supervision and workload	Daily *n* (%)	Weekly *n* (%)	Monthly *n* (%)	Less than once a month *n* (%)	never *n* (%)	NA *n* (%)
How often (if ever) are you supervised by someone who you feel isn't competent to do so?	14 (3.26)	98 (22.79)	56 (13.02)	55 (12.79)	95 (22.09)	112 (26.05)
How often (if ever) do you feel forced to cope with clinical problems beyond your competence or experience?	14 (3.26)	98 (22.79)	42 (9.77)	164 (38.14)	42 (9.77)	70 (16.28)
How often (if ever) are you expected to obtain consent for procedures where you feel you do not understand the proposed intervention and its risks?	28 (6.51)	70 (16.28)	42 (9.77)	192 (44.65)	28 (6.51)	70 (16.28)
Have you worked out of hours (this includes night shifts and weekends)?	97 (22.56)	166 (38.60)	153 (35.58)	14 (3.26)	11 (2.56)	0 (0.00)
How often (if at all) do your working pattern leave you feeling short of sleep when at work?	153 (35.58)	166 (38.60)	111 (25.81)	0 (0.00)	0 (0.00)	0 (0.00)

NA = not applicable

Figures
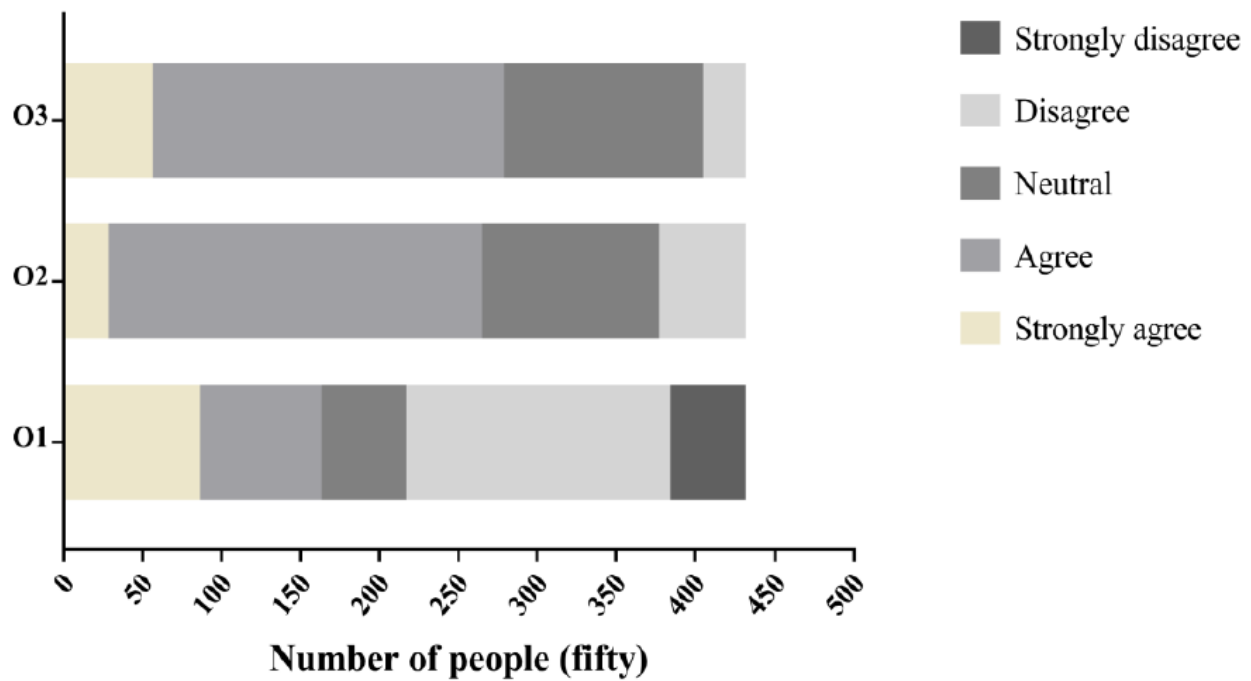
Figure 1. Overall satisfaction and adequate experience

O1: I am satisfied with the quality of training in clinical practice.

O2: I am confident that MD career will help me acquire the competencies I need at my current stage of training.

O3: This post will be useful for my future career.

Figure 1
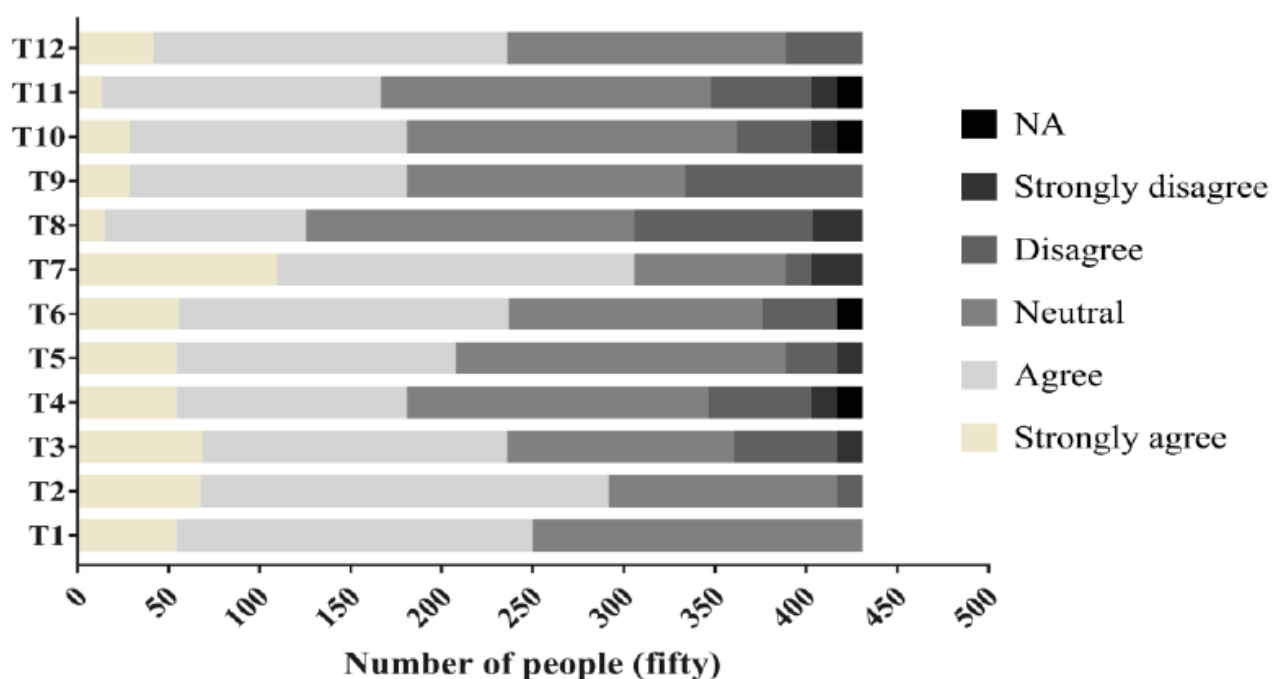
Figure 2. Teamwork, educational governance and supportive environment

T1: My organization encourages teamwork culture between multidiscipline healthcare professionals.

T2: My organization encourages teamwork culture between clinical departments.

T3: If I asked for help from outside my department, I'm confident I would receive it.

T4: I am confident that I know how, or could find out how, to raise a concern about my education and training.

T5: If I were to raise a concern about my education and training, I'm confident it would be addressed.

T6: I am confident that I know how, or could find out how, to escalate such a concern if I felt it wasn't being addressed.

T7: The training environment is fully supportive.

T8: Staff is always treated fairly.

T9: Staff always treats each other with respect.

T10: The training environment is one that fully supports the confidence building of physicians in training.

T11: If I were to disagree with senior physicians, they would be open to my opinion.

T12: If I had any concerns (personal or educational) I would know who to approach to talk to in confidence.

Figure 2

Number of people (fifty)
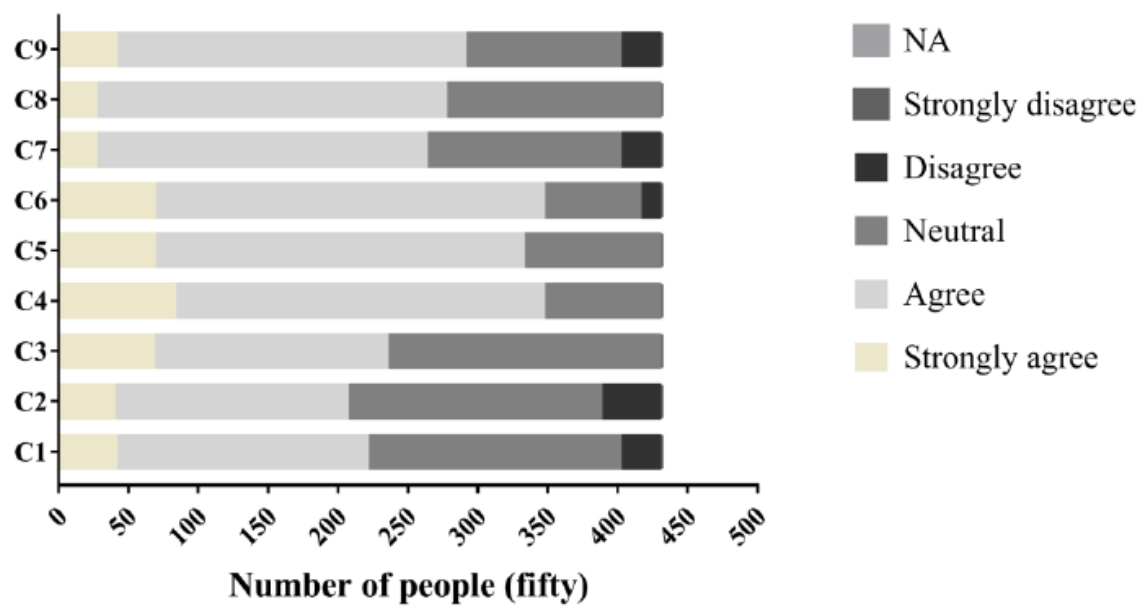
Figure 3. Curriculum coverage and supervised learning events

C1: I'm confident that this post will give the opportunities to meet cultivation objectives in: PROFESSIONAL EXPERIENCE (leadership, teaching, research, and quality improvement etc.)

C2: I'm confident that this post will give the opportunities to meet cultivation objectives in: PRACTICAL EXPERIENCE (procedures and treatments of chest drains, passing NG tubes, minor surgeries under local anesthetic, biopsies, fitting coils, injections, psychological therapies etc.)

C3: I'm confident that this post will give the opportunities to meet cultivation objectives in: CLINICAL EXPERIENCE (examination skills, taking a history, deciding investigations and management, seeing a variety of patients in different settings etc.)

C4: Supervised learning events (SLEs) have led to me reflecting on my clinical practice.

C5: SLEs have helped me to identify areas in which I need to develop.

C6: SLEs have enabled me to improve my practice.

C7: How easy or difficult was it to get a suitable physician to complete an SLE with you?

C8: I have access to a senior physician who is onsite at all times.

C9: The senior physician onsite could advise on any clinical situation.

Figure 3
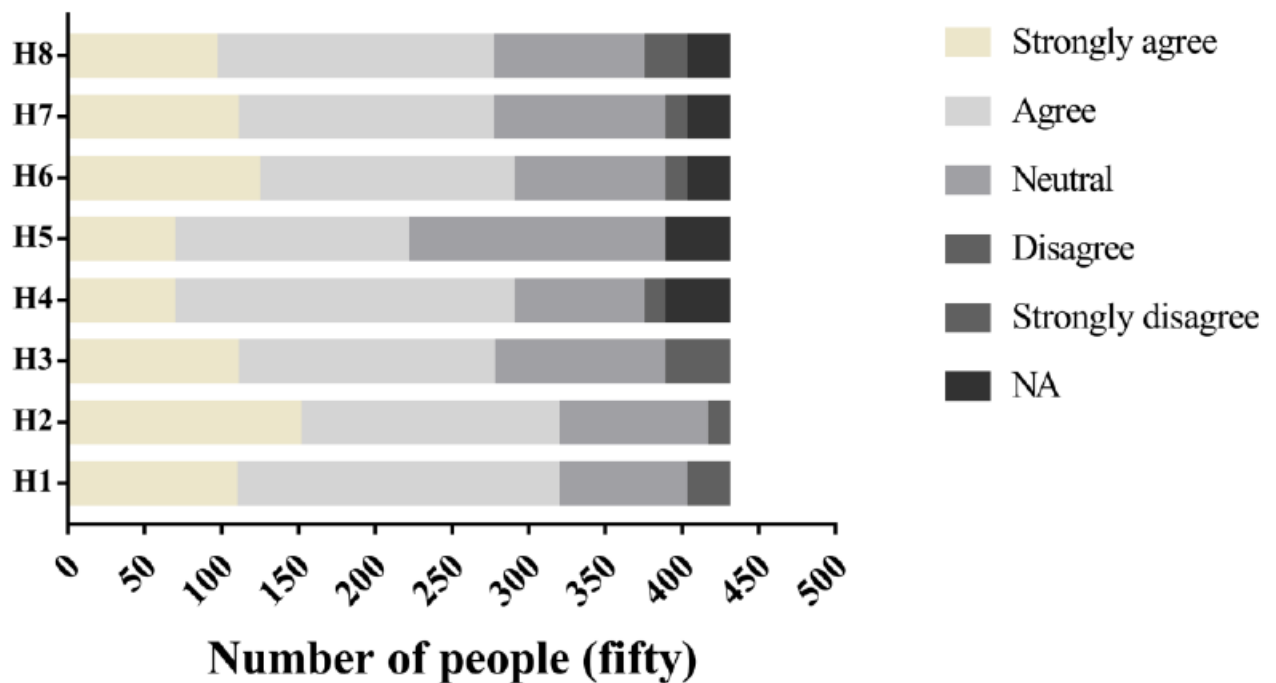
Figure 4. Handover and reporting systems

H1: Handover arrangements always ensure continuity of care for patients between shifts.

H2: Handover arrangements always ensure continuity of care for patients between departments.

H3: Appropriate members of the multidisciplinary team are included in handover.

H4: I have been made aware of how to report patient safety incidents and near misses.

H5: There is a culture of proactively reporting concerns.

H6: There is a culture of learning lessons from concerns raised.

H7: I am confident that concerns are effectively dealt with.

H8: When concerns are raised, the subsequent actions are fed back appropriately.

Figure 4

Figure 5. Clinical experience, clinical supervision, local teaching and overall satisfaction

CE1: How would you rate the quality of the local/departmental teaching?

CE2: How would you rate the quality of teaching (informal and bedside teaching as well as formal and organized sessions)?

CE3: How would you rate the quality of clinical supervision?

CE4: How would you rate the quality of clinical experience?

CE5: How would you rate the practical experience you were receiving?

Figure 5

Number of people (fifty)
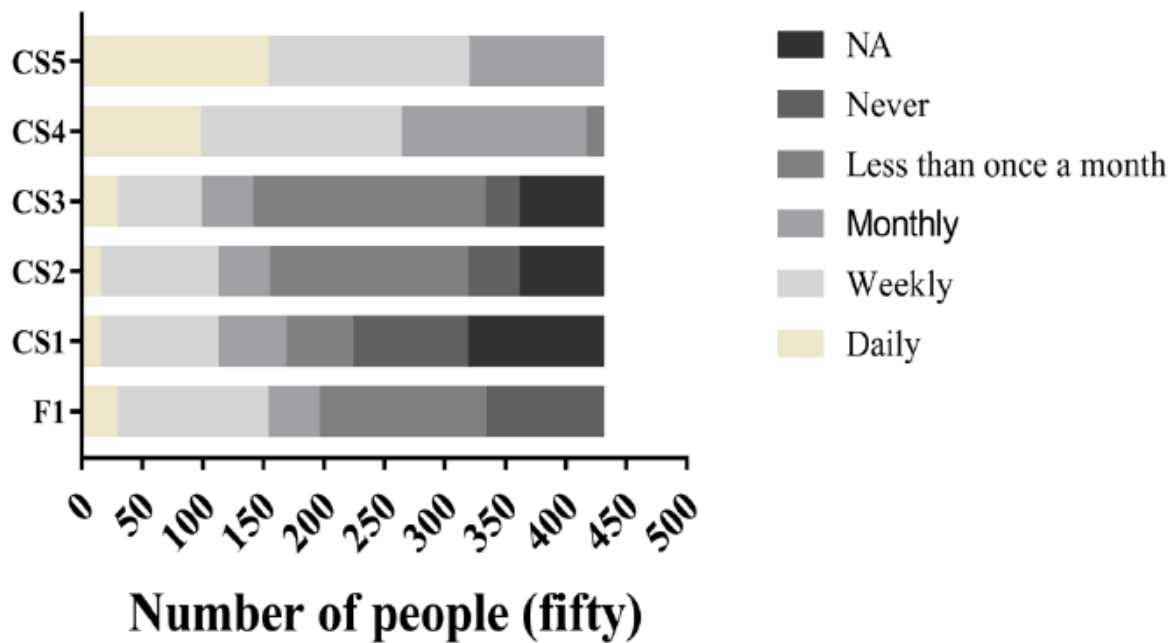
Figure 6. Feedback, clinical supervision and workload

F1: How often (if at all) do you receive informal feedback from senior physicians about your performance?

CS1: How often (if ever) are you supervised by someone who you feel isn't competent to do so?

CS2: How often (if ever) do you feel forced to cope with clinical problems beyond your competence or experience?

CS3: How often (if ever) are you expected to obtain consent for procedures where you feel you do not understand the proposed intervention and its risks?

CS4: Have you worked out of hours (this includes night shifts and weekends)?

CS5: How often (if at all) do your working pattern leave you feeling short of sleep when at work?

Figure 6