ORIGINAL ARTICLE

Alumni Experience on Postgraduate Medical Training in Transfusion Medicine in Malaysia

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ABSTRACT

Introduction: Transfusion Medicine is an evolving filed which integrates multidisciplinary science in providing safe blood and blood products for patients. With an increasing demand for Transfusion Medicine training in Malaysia, a formal survey is needed to evaluate the postgraduate Transfusion Medicine programme offered by Advanced Medical and Dental Institute, Universiti Sains Malaysia to identify areas of deficiency based on the alumni experiences. **Methods:** An English language survey form was developed specifically to assess the programme contents (overall contents, learning experience in each year, and support in research), the alumni perception on soft-skills gained during the study, and the outcome of the programme. The survey forms were distributed to all alumni between March 2018 and October 2018 via e-mail or hand-delivered. **Results:** The survey response rate was 79% (37 of 47). A majority (97%) of the transfusion medicine specialists (TMS) in this study reported that the course offered in the program was relevant to their current job. The learning experience which includes course content, student's placement, facilities, and support in research) were rated between satisfactory and good. Communicating effectively through speaking was the highest reported soft-skill gained during the programme, whereas communicating effectively in writing was the lowest soft-skill gained. On the programme outcome, all TMS agreed that this programme will produce qualified and well trained specialists for current working market. **Conclusion:** Some improvement in the programme contents and teaching activities are needed to equip the future TMS for the nation.

Keywords: Transfusion medicine, TMS, Master of medicine, Medical training

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INTRODUCTION

Transfusion medicine is an evolving field. It integrates multidisciplinary science in providing safe blood and blood products for treatment as part of patient management. Previous studies have shown a lack of knowledge in transfusion medicine among clinicians across all specialties despite their active roles in decision to transfuse patients (1-8). Furthermore, inappropriate transfusion and errors concerning blood transfusion practices were commonly seen (9-11). Collectively, these studies have indicated the needs for further educational training in transfusion medicine (1-8).

Recognising the need for a formal training in transfusion medicine, a workshop was conducted to discuss regarding the programme structure and content for Master of Medicine (Transfusion Medicine) in 2003. This workshop was jointly organised by Advanced Medical and Dental Institute (AMDI), Universiti Sains Malaysia (USM) and National Blood Centre (NBC), Ministry of Health Malaysia (MOH). The participants involved were expertise from USM and MOH as well as from Australia (12). Subsequently, this programme was endorsed by Department of Higher Education Management, Ministry of Higher Education Malaysia in the year 2005 and received its first students' enrolment in 2006.

The Master of Medicine (Transfusion Medicine) programme differed from other fellowship or Master of Science (Transfusion Medicine) as it is a 4-year course work programme which integrates theory, practical, direct student participation in clinical and laboratory management with research component. The programme structure is shown in Figure 1 which consisted of three phases; Phase I (1-year of theory, laboratory practical, on-site job training, and Professional Exam I), Phase II (2-years of theory, on-site job training, research, and Professional Exam II), and Phase III (1-year of on-site job training as Transfusion Medicine Registrar and Viva voce). The student placement in year one of study

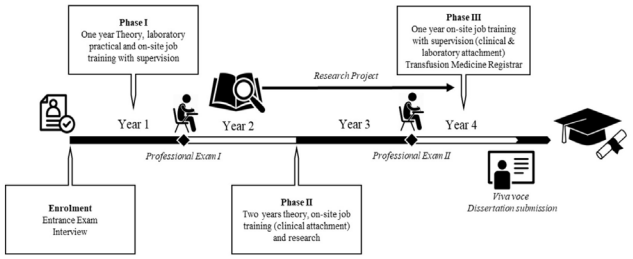

Figure 1: Programme structure

mostly located at AMDI, USM with several attachment to other nearby hospitals. For year two and year three, the placements are rotated between NBC, HUSM, and other hospitals located in nearby NBC. For year four, the placement was mostly at NBC. The research activities for candidates in this programme start in year two until middle of year four. The candidates are required to submit a dissertation in year four as partial requirement for graduation apart from passing the professional exams. The study location for most researches were either in HUSM or NBC. All studies that had been conducted by the previous candidates involves research in transfusion medicine which varies from donor recruitment, blood processing to management of transfusion reactions in patient. Overall, this programme is designed to provide the graduates in acquiring specialised experience and knowledge in areas of transfusion science as well as national and international regulations and practices in transfusion, transplantation, and tissue banking.

Up to 2018, this programme has produced 49 graduates nationwide. All graduates from this programme are currently working in MOH hospitals and local university hospital as Transfusion Medicine Specialist (TMS). The job scope of TMS involves management of the laboratory transfusion medicine unit, including quality, safety and regulatory aspects of donation; blood processing and screening; storage; and also ensuring adequate and safe blood transfusion supply. TMS also involves in the provision of cell therapy products (e.g. cord blood) and human tissues for transplantation purposes. In addition, TMS plays an important role in engaging the governments and other health professionals to ensure safe transfusion practice. Apart from that, TMS involves in basic scientific and clinically applied research for field advancement (13).

With an increasing demand for training in transfusion medicine in Malaysia (14), a formal survey is needed to evaluate the programme. Feedback and recommendations from the alumni are useful tools for this purpose (15). This will provide valuable information to identify areas of deficiency that could be improved in ensuring the programme delivers adept training for future TMS. Hence, this study aimed to evaluate the Master of Medicine (Transfusion Medicine) programme based on the alumni experience and focusing on the programme contents, the alumni's perceptions on soft-skills gained during the programme, and the programme outcomes. Additionally, recommendations for future improvement was also obtained from the alumni.

MATERIALS AND METHODS

A cross-sectional survey was conducted in AMDI, USM, Kepala Batas, Pulau Pinang, from March 2018 until October 2018 using purposeful sampling method. The study participants were TMS graduated from the Master of Medicine (Transfusion Medicine) programme in AMDI, USM. The inclusion criteria was all alumni who have successfully graduated from the programme and the exclusion criteria was alumni who were part of this study to avoid bias opinions regarding the programme. Up to 2018, there were 49 alumni graduated from the programme. After excluding two TMS who were part of this study, a total of 47 alumni were invited to participate in the survey voluntarily. Depending on suitability, the survey forms were e-mailed or hand-delivered to the respondents. Reminder e-mails were sent twice to maximise responses.

To conduct the survey, an English language self-administered survey form was developed by a team of lecturers involved in the programme. The content of the survey form was developed based on discussion among the lecturers on the important aspects of the programme that required feedback from the alumni which includes the following: programme's overall contents, learning experience in each year, support in research, perception on soft-skills gained during the programme, and outcome of the programme. After content development, an expert meeting was held to assess the content validity of the survey items. Next, two TMS who were part of this study assessed the survey items for face validity. As this study was not conducted for the purpose of knowledge or psychometric assessment, construct validity for the items developed in the survey was not performed. Furthermore, as the survey items were developed specifically to evaluate the Transfusion Medicine programme at AMDI with limited sample of only 47 respondents, the cronbach's alpha for the items were not assessed.

The final version of the survey form comprised of five parts. Part I consisted of general information of the participants such as current working place, name of department and institution, year of enrolment, and year of graduation. Part II is about the candidate's background before enrolling to the programme. Part III consisted of programme contents such as overall contents, learning experience in each year, and support in research. For the overall contents of the programme, there were six questions asked with 'Yes' and 'No' responses. For the learning experience in each year (Year 1 to Year 4), three aspects were evaluated which comprised of course content/ syllabus, student's placement, and facilities (reference

books and journal availability). The respondents were asked to rate each aspect for learning experience in year 1 to 4 based on five-point score (1=poor, 2=borderline, 3=satisfactory, 4=good, 5=excellent) and mean scores were calculated for each year. The mean scores for each aspect were then plotted against year of study. For the support in research, three aspects were evaluated which are dissertation supervision, assistance in statistical analysis, and facilities to conduct research. The five-point score (1=poor, 2=borderline, 3=satisfactory, 4=good, 5=excellent) was also used to rate experience for support in research. Part IV consisted of six statements about the candidate's perception on soft-skills gained during the study. The statements regarding soft-skills were developed based on the important soft-skills that doctors should have in medical practice (16, 17) and five-point score responses were used (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) to indicate a degree of disagreement or agreement with each statement regarding soft-skills. Responses 1 to 3 were later categorised into "Did not gained" and responses 4 to 5 into "Gained". Lastly, part V consisted of two questions related to outcome of the programme with 'Yes' and 'No' responses and recommendations to improve the programme.

Data analysis was performed using IBM SPSS version 24.0 to obtain descriptive statistics for all survey questions and statements. This study has obtained ethical approval from the Human Research Ethics Committee of USM (USM/JEPeM/18070303).

RESULTS

Of the 47 TMS invited to participate in the study, only 37 responded to the programme evaluation survey. Almost all respondents (92%) are currently working at government hospitals and only one at academic institution. Up to 2018, the Master of Medicine (Transfusion Medicine) programme has graduated nine batches of TMS.

Overall contents of the programme

The six questions related to the programme's overall contents are shown in Table I. A majority of the respondents agreed that the course offered was relevant to their current job (97%) and the overall course content contributes to the strength of the programme (89%). Only a small proportion of 19% responded that there was topic that is not relevant in the programme. A majority also agreed that the programme was sufficient in terms of clinical attachment duration (89%) and laboratory attachment duration (76%). In spite of this, more than half (60%) responded they would recommend clinical attachment with different institutions.

Learning experience in each year

Figure 2 shows the learning experience ratings in each year for course content, student's placement, facilities for reference books, and facilities for journal availability. For the course contents, the average rating fall between 3 (satisfactory) and 4 (good), with highest rating reported for year 1 of study and lowest for year 2. Similar average rating was seen for student's placement which fall between 3 (satisfactory) and 4 (good), with highest rating reported for year 4 of study. Likewise, the ratings for both reference books and journal availability facilities also fall between 3 (satisfactory) and 4 (good), with highest score reported in year 1 and lowest in year 2.

Table I. Overall contents of the programme (N=37)

Overall contents	Yes n (%)	No n (%)
1. Is the course offered relevant to your current job?	36 (97.3)	1 (2.7)
2. Does the overall course content contributes to the strength of the programme?	33 (89.2)	4 (10.8)
3. Is there any topic that is not relevant in the programme?	7 (18.9)	26 (70.3)
4. Is this programme sufficient in the terms of clinical attachment duration?	33 (89.2)	4 (10.8)
5. Is this programme sufficient in terms of laboratory attachment duration?	28 (75.7)	9 (24.3)
6. Would you recommend any clinical attachment with different institutions?	22 (59.5)	15 (40.5)

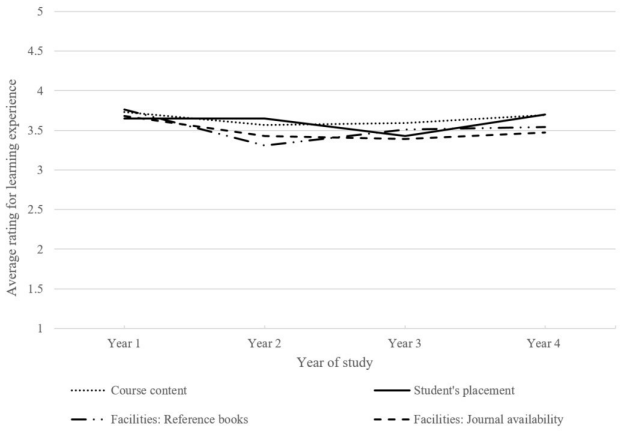

Figure 2: Learning experience in each year

Support in research

Three aspects were evaluated for the support in research throughout the program. The mean and its standard deviation ratings were 3.65 (0.8) for dissertation supervision, 3.24 (1.0) for assistance in statistical analysis, and 3.57 (0.6) for facilities to conduct research. The ratings for all aspects fall between 3 (satisfactory) and 4 (good), which indicates satisfactory support in research.

Perception on soft-skills gained during the programme

Table II shows the responses for perception on soft-skills gained during the programme. Overall, majority indicated they gained soft-skills during the programme, where skills in communicating effectively through speaking was highest (87%), followed by working with

Table II: Perception on soft-skills gained during the programme (N=37)

Perceptions on soft-skills gained	Gained n (%)	Did not gained n (%)
1. Communicating effectively through speaking	32 (86.5)	5 (13.5)
2. Working with a team to complete projects	31 (83.8)	6 (16.3)
3. Understanding the needs of others	30 (81.1)	7 (18.9)
4. Interacting and working with people of other specialties	28 (75.7)	9 (4.3)
5. Leading others when working in group	28 (75.7)	9 (24.3)
6. Communicating effectively in writing	24 (64.9)	13 (35.1)

a team to complete projects (84%), understanding the needs of others (81%), interacting and working with people of other specialities (76%), leading others when working in group (76%), and communicating effectively in writing (65%).

Outcome of the programme

The two questions related to the outcome of the programme are presented in Table III. All 37 TMS agreed that this programme will produce qualified and well trained specialists for current working market in medical sector, healthcare services, and academia. All except one person will recommend this programme to their peers and people in their network.

The main areas to improve which were highlighted by majority alumni in this study were related to clinical attachment (to include more clinical attachment for stem cell collections, syllabus contents (to include more exposure on quality management and more focus on immunohaematology), and logistic issues (to reduce frequent travelling).

Table III: Outcome of the programme (N=37)

Outcome of the programme	Yes n (%)	No n (%)
1. Will this programme produce qualified and well-trained specialists for current working market in medical sector, healthcare services, and acade mia?	37 (100)	-
2. Will you recommend this programme to your peers and people in your network?	36 (97.3)	1 (2.7)

DISCUSSION

The Master of Medicine (Transfusion Medicine) programme offered at AMDI, USM is the only programme available for postgraduate medical training in transfusion medicine in Malaysia at present. This survey was conducted to identify areas of deficiency for programme improvement and to share the experience of the TMS graduated from our programme. Previous study had shown that feedback from alumni is needed for medical education programme evaluation (15, 18). Furthermore, effectiveness of the program and teaching faculty can also be evaluated from alumni survey (19) and this has been used in other medical specialties such as emergency medicine (15), obstetrics and gynaecology (18), and plastic surgery (20) as an assessment tool for programme improvement.

This survey revealed overall positive feedbacks on the overall contents of the transfusion medicine programme, in which majority TMS agreed that the course offered was relevant to their current job and the overall course contributes to the strength of the programme. The learning experience scores for all aspects (course content, student's placement, facilities, and support in research) indicates some improvement is needed for the programme curriculum. The course content was rated highest in year one of study, which was expected as year one course content consisted of lectures, tutorials, case discussions, laboratory practical (for both haematology and immunohaematology), and visits to blood bank in other hospitals. Whereas, the course contents for year two to year four involves mostly clinical service and clinical case discussions with minimal lectures and tutorials. The student's placement was rated the highest for year four as year four placement was mostly located at NBC and require less travelling. Unlike other programme, students in the transfusion medicine programme undergone frequent rotations in different hospitals for clinical and laboratory attachments starting from year two until year four for exposure of transfusion medicine practice in variety of disciplines such as blood bank, general medical practice, surgical practice, and other medical specialties. Over the years since the programme started in 2006, several changes were made concerning the clinical and laboratory placements to meet the candidates' needs of exposure to different settings.

The facilities for reference books and journal availability was rated highest in year 1 and lowest in year 2. As the examination for candidates in this programme involved Professional Exam I in year one and Professional Exam II in year three, learning facilities such as providing more reference books and access to journal database will be helpful to improve the candidates' knowledge in this evolving field. In addition, electronic materials should be made available as studies has shown increased preference for electronic materials among residents (21). For support in research, the candidates reported the lowest rating for assistance in statistical analysis as this was available mostly in AMDI, USM and HUSM only. Hence, relevant courses in statistical analysis would be beneficial for candidates throughout their research activities.

Besides good medical skills, a part of what makes doctors highly-regarded by others is their soft skills which encompass personal qualities, habits, attitudes, and social abilities. The soft skills that are needed by clinicians include leadership skills, ability to solve problems, effective decision-making, compassion, good bedside manner, and communication skills (17). The majority of TMS indicated that they gained soft-skills during the programme, with highest percentage seen

in effective communication skills obtained through speaking, and lowest percentage seen for effective communication skills in writing. Communication skill is essential for TMS as the scope of work requires constant communication with patients, donors, and other specialties. Therefore, inclusion of communication and leadership skills in the programme curriculum will be useful for future career (22).

All TMS in this survey indicated that the Master of Medicine (Transfusion Medicine) programme has helped them to become a well-trained TMS in their respective hospital or institution. Majority TMS also indicated that they will recommend the programme to their peers although one person disagreed due to limited and narrow career pathway in transfusion medicine in Malaysia. As suggested by the alumni, this programme required further improvements in clinical attachment, syllabus contents, and logistic issues. To date, proper postgraduate medical training programme in transfusion medicine is not yet established in many countries (23-26) and thus the literature on outcome of postgraduate medical training in transfusion medicine from the alumni perspective is still lacking. However, studies on the effect of transfusion medicine training programme or interventions have shown significant improvement on clinicians' knowledge and transfusion practice (27-29), suggesting that training in transfusion medicine lead to a better transfusion practice.

This survey has several limitations. First, there were not many respondents from the earlier batches that graduated from the programme, hence missing important feedbacks from this batch. Second, there was a long interval from the first graduates in year 2010 to recent graduates in year 2018. Over the years, there were many changes in the programme structure and contents when the programme was initially introduced as compared to the current programme. Hence, different batches may have different experience in course content and student's placement.

CONCLUSION

The main role of TMS is to make transfusion therapy safe to all patients. In order to achieve this, laboratory and clinical exposures are crucial to help TMS making the right decision in transfusion process. Clinical attachment should be focused at tertiary hospital with advance transfusion service to minimise the logistic problem with frequent visit and supervision from lecturers. A more extensive immunohaematology knowledge and hands on are expected from the alumni. Adequate number of dedicated lecturers is critical to handle and manage the programme as well as students effectively. With the advancement of technology as well as emerging new knowledge and concepts, some improvement in the programme contents and teaching activities are needed to equip the future TMS for the nation.

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