ORIGINAL ARTICLE

Attitudes, barriers and facilitators to the conduct of research in government hospitals: a cross-sectional study among specialists in government hospitals, northern states of Malaysia

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ABSTRACT

Introduction: Specialists constitute a major 'driving force' and catalyst for growth of research in their speciality. A clearer understanding is required as to what motivates their participation in research as well as the barriers they faced. This research aims to study the attitudes, barriers and facilitators faced by specialists and to identify strategies to promote and sustain research activities in their hospitals.

Methodology: A cross-sectional survey using self-administered questionnaires was conducted among all specialists working in government specialist hospitals in the northern states of Malaysia.

Results: Out of 733 questionnaires distributed, 467 were returned giving a response rate of 63.7%. Ninety-nine percent of the respondents believed that research benefits patients while 93.3% think research helps in their professional development. However, 34.8% think that under their present working conditions, it is unlikely they will participate in research. The major barriers identified were lack of funds for research (81%); lack access to expertise, software or statistical analysis (78.4%); interference with daily work schedule (75.1%) and inconsistent manpower in their department (74.2%). There are three barriers with statistically significant difference between hospitals with CRC compared to hospitals without CRC; lack of funds, mentors and access to expertise, software or statistical analysis. The demographic factors, attitudes and barriers contributing to involvement in research also investigated. The main facilitators for the conduct of research are potential to benefit patients and potential for professional development.

Conclusion: Taking note of the findings, the Ministry of Health can implement appropriate strategies to improve specialist participation in research.

KEY WORDS:
Attitudes, barriers, facilitators, specialists, research

INTRODUCTION

Much of the advances in medicine in the past century can be attributed to medical research. Research is the cornerstone of evidence-based medical practice, which translates new knowledge and technological capability into powerful tools for prevention and treatment of diseases.[1] Increased number of clinical research studies shows the need for greater participation of doctors as well as patients.[2]

Doctors face a variety of barriers with regards to participation in clinical research. The barriers usually encountered by doctors are reported in several studies.[1-13] The most common barriers reported in these studies were lack of time, training and money. In fact, in their recent survey, the Royal College of Physicians has reported lack of time and money as the biggest barriers to doctors to undertake research.[14]

The Ministry of Health (MOH), Malaysia has instituted various measures and initiatives to build research capability and a research culture especially in government specialist hospitals. Most major hospitals of MOH have Clinical Research Centre who plays major role in supporting clinical research in terms of facilities and services. Research is one of the role expectations of specialists and constitutes an integral part of their routine duties. Nevertheless, balancing clinical duties, training, administrative functions and research activities remain a challenge for most specialists. A clearer understanding is required as to what motivates and encourages their participation in research, as well as the barriers and challenges faced by this important group which constitutes a major 'driving force' and catalyst for growth of research in their departments and institution.

This study focuses on specialists working in all specialist hospitals in the Northern States of Malaysia which include Perak, Penang, Kedah and Perlis. The objective is to study the attitudes, barriers and facilitators faced by this group of specialists towards clinical research. The study also aims to identify strategies to promote and sustain research activities in their respective hospitals.

MATERIALS AND METHODS

This is a cross-sectional survey using self-administered questionnaire. Respondents were requested to answer questions relating to them as individuals. There is no locally developed questionnaire to be adapted for this study, thus the questionnaire was developed by identifying and compiling

This article was accepted: 21 December 2016
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various findings from literature review of relevant studies.[9-11] Experiences and feedback from specialists at past meetings and discussions, both formal and informal, were also taken into consideration. The questionnaire was pre-tested on ten specialists from Hospital Taiping to determine the face validity of the questionnaire. The specialists were chosen conveniently from each clinical department based on their availability during the pre-test. The feedbacks during pre-test were used for further improvement of the questionnaire.

In total, there were 33 items in the questionnaire. Dichotomous questions ("Yes" or "No" answer) were used to assess attitude and barriers. There were ten questions on attitude and 15 questions on barriers. To assess 'facilitators' or motivating factors, respondents were asked to rank a list of eight facilitators from the most to the least important. The highest rank was given a score of eight, the second highest a score of seven and so on, with the lowest rank given a score of one. The total score for each facilitator reflects the relative importance of each factor as perceived by the respondents.

Sampling was universal and all specialists working in public hospitals in the northern states of Malaysia were included for the survey. Previous study reported 40% involvement in research by juniors in medical school.[1] Estimating 10% of involvement in research by public hospital specialists, the minimum required sample size for this study was 369. Northern states were conveniently chosen for this study purpose. A total of 13 specialist hospitals participated in the survey (one specialist hospital in Perlis, four in Kedah, three in Penang and five in Perak). The total number of specialists working in each specialist hospital was obtained from the respective State Health Department. Total number of specialist practicing during the data collection was 913. The sets of questionnaires sent to each hospital were 80% of the total number of specialists listed taking into consideration that some of the specialists would be away for various reasons at the time of the survey. However, hospitals were allowed to make additional copies if the questionnaires supplied were not sufficient. Assistance from the Hospital Director's office was requested to distribute the questionnaires to the specialists in their respective hospitals as well as to collect and return the completed questionnaires.

Data was analysed using Statistical Package for Social Sciences (SPSS) version 20. Chi square test was used to assess the association between involvement in research and the variables related to study participants' demographics and training experience. Logistic regression analysis with 95% confidence intervals of odds ratios was used to calculate the differences in proportion of attitude and barriers towards research between those who were involved versus those who were not involved in research.

Ethical consideration

Specialists' participation was entirely voluntary. No personal identifiable information was recorded in the questionnaire. The study was approved by the Medical Research and Ethics Committee (MREC), Ministry of Health (MOH).

RESULTS

Participants

A total of 733 questionnaires were distributed and 467 were returned giving a response rate of 63.1%. There were almost an equal number of males and females. Majority of the respondents were between 30 and 44 years old (n= 340; 72.8%). Respondents included 92 heads of department (19.7%), 137 consultant specialists (29.3%), 195 junior specialists (41.8%) and 42 specialists under gazettement (9%) as in Table I.

Most respondents cited they had research training as a post-graduate training requirement (n=295; 63.9%), about one third had research experience as a principal/sub investigator in investigator-initiated research (IIR) (n=149; 32.3%) and only some in industry sponsored research (ISR) (n=137; 21.8%). Also, more than half had received Good Clinical Practice (GCP) certification (n=296, 63.4 %)

As for their involvement in research, 100 (22.3%) of the respondents were found to be involved in investigator-initiated research at the time of the survey, 70 (15.6%) in industry-sponsored research while only 30 (6.7%) were involved in both investigator-initiated research and industry-sponsored research. More than half were not involved in any form of research activity (n=248, 55.4%) at the time of study. Out of this group of specialists who were not involved in any form of research, the majority belong to the 30-44 year age group (n=184; 74%).

A statistically significant difference can be observed in proportion of men compared to women with p =0.048 and those from Level I (head of departments and consultants) designation versus Level II (gazetted specialists and specialists on gazettement) with p=0.026. Those who had research experience during their postgraduate years were not involved in current research at a significantly higher proportion compared to those who had not with p<0.001. Specialists who were certified in GCP have higher proportion of involvement in current research, 77.4% compared to those were not, 54.3% with p<0.001. The other factors are as illustrated in Table II.

Attitude towards Research

The majority of the respondents believed that research benefits patients and society (n=460; 98.9%) and that research helps in their professional development (n=434; 93.3%). However, less than half perceive research to be one of their job functions (n=231; 49.7%). More than one third of respondents cited that under their present working conditions, it is unlikely they will participate in research in the near future (n=162; 34.8%). There is also a small group of specialists who think that research can be harmful to their patients (n=68; 14.6%) and that research is a waste of time (n=15; 3.2%). Specialists who think that research is one of their job functions have 2.42 times odds of involving in research compared to those who think it is not. Whereas, specialists who think that under their present conditions, it's unlikely will do research in near future have 0.38 times odds of not involving in research compared those who involve in research (Table III).

Table I: Demographics

	n (%)
Overall response rate	467/733 (63.7)
Gender	
Male	229 (49.0)
Female	233 (49.9)
*Missing data	5 (1.1)
Age Range	
30-34	64 (13.7)
35-39	165 (35.3)
40-44	111 (23.8)
45-49	60 (12.8)
50-54	36 (7.7)
More than 55	17 (3.6)
*Missing data	14 (3.0)
Designation	
Head of Department	92 (19.7)
Consultant Specialist	137 (29.3)
Gazetted Specialist	195 (41.8)
Specialist under gazettement	42 (9.0)
*Missing data	1 (0.2)
Directorate	
Medical	140 (30.0)
Surgical	126 (27.0)
Women & Child Health	83 (17.8)
Others	113 (24.2)
*Missing data	5 (1.1)

Table II: Factors associated with current involvement in research among specialists in public hospital in Northern States of Malaysia

Factors	Total n(%)	Currently involved n(%)	Currently not involved n(%)	p-value
Gender				
Male	229(49.0)	110(54.2)	111(44.8)	0.048
Female	233(49.9)	91(44.3)	134 (54.0)	
Age in Years				
30-39	229(49.0)	91(44.8)	130(52.4)	0.239
40-49	171(36.6)	80(39.4)	88(35.5)	
≥50		53(14.3)	32(15.8)	
Designation				
Level 1*	229(49.1)	111(54.7)	109(44.0)	0.026
Level 2**	237(50.9)	92(45.3)	138(55.6)	
Research Experience in postgraduate requirement				
No	172(36.3)	91(44.8)	70(28.6)	<0.001
Yes	295(63.7)	112(55.2)	175(71.4)	
Research Training-GCP Certified				
No	160(34.3)	45(22.2)	113(45.6)	<0.001
Yes	296(63.4)	154(75.9)	134(54.0)	
Research Training Master's/PhD/Fellowship				
No	339(72.6)	160(78.8)	172(69.4)	0.007
Yes	116(24.8)	38(18.7)	75(30.2)	

* Level 1: Head of Department, Consultant
**Level 2: Gazetted Specialist, specialist on gazettement

Table III: Distribution and factors associated with attitude and barriers towards research among specialist in Public Hospital in Northern State in Malaysia

Statements Agreed	Currently involve in research n(%)	Currently not involved in research n(%)	Odds Ratios (95%CI)	Adjusted Odds Ratio (95%CI)
	Attitude towards research			
Research is one of my job functions	128(64.3))	95(39.6)	2.75 (1.87-4.06)	2.42 (1.60-3.64)
Under my present working condition, it's unlikely I will do research in near future	43(21.7)	110(45.3)	2.98 (1.96-4.55)	0.38 (0.24-0.59)
	Barriers towards research			
Desire for work/life balance	69(34.8)	185(78.1)	0.53 (0.34-0.80)	1.60 (1.02-2.52)
Inadequate skills in research	120(59.4)	189(78.1)	0.41 (0.27-0.62)	1.67 (1.03-2.69)
Inadequate opportunities for training	96(48.5)	165(69.6)	0.41 (0.27-0.60)	1.83 (1.17-2.86)

Table IV: Barriers to Research faced by Specialists in Government Hospitals

Barriers to research	n (%)
Lack of funds for research	374 (81.0)
Lack of access to expertise, software or statistical analysis	362 (78.4)
It interferes with my daily work schedule e.g. clinic duties, ward rounds etc.	347 (75.1)
Inconsistent number of doctors in my department	343 (74.2)
No coordinated approach to research in my department	325 (70.3)
Desire for work/life balance	318 (68.8)
Inadequate skills in research	315 (68.2)
Lack of access to journals and articles	309 (66.9)
Too much red tape in obtaining approvals (NMRR/NIH/MREC)	308 (66.7)
Lack of mentors	307 (66.5)
Inadequate opportunities for training	270 (58.4)
Research is not a priority in my department	216 (46.8)
Lack of encouragement and support from department/institution	190 (41.1)
Lack of recognition from top management	161 (34.8)
Community distrust of research	95 (20.6)

Table V: Barriers to Research faced by Specialists in Government Hospitals with Clinical Research Centres (CRCs) vs those without CRCs (Answered Yes)

	With CRC n(%)	Without CRC n(%)	p value
Lack of funds for research	**304(80.2)**	**70(94.6)**	**0.003**
It interferes with my daily work schedule e.g. clinic duties, ward rounds etc.	297(78.4)	52(68.4)	0.061
Lack of access to expertise, software or statistical analysis	**295(77.2)**	**67(88.2)**	**0.032**
Inconsistent number of doctors in my department	283(74.3)	61(81.3)	0.194
No coordinated approach to research in my department	271(71.1)	55(73.3)	0.699
Desire for work/life balance	268(71.7)	52(70.3)	0.809
Lack of access to journals and articles	260(68.2)	49(63.6)	0.431
Inadequate skills in research	259(67.8)	58(77.3)	0.102
Too much red tape in obtaining approvals (NMRR/NIH/MREC)	255(67.6)	54(74.0)	0.286
Lack of mentors	**249(65.7)**	**58(77.3)**	**0.049**
Inadequate opportunities for training	223(59.5)	47(64.4)	0.432
Research is not a priority in my department	178(46.8)	38(52.1)	0.414
Lack of encouragement and support from department/institution	156(41.2)	34(45.3)	0.503
Lack of recognition from top management	131(34.7)	30(40.5)	0.334
Community distrust of research	78(20.8)	17(23.0)	0.676

Barriers to Research faced by Specialists in Government Hospitals
Table IV display study results related to barriers faced by specialists in conduct of research. The major barriers cited include lack of funds for research (n=374; 81%), lack of access to expertise, software or statistical analysis (n=362; 78.4%) and to journals and articles (n=309; 66.9%). Significant barriers highlighted involved work environment issues such as interference with daily work schedule (n=347; 75.1%), the problem of inconsistent number of doctors in their department (n=343, 74.2%) and a lack of research co-ordination in their departments (n=325; 70.3%). Other barriers revealed inadequate skills in research (n=315; 68.2%), too much red tape in getting approvals (n=308; 66.7%), lack of mentors (n=307; 66.5%) and inadequate opportunities for training (n= 270; 58.4%).

Those who desire for work/life balance have 1.60 times odds of not involving in research compared to those who involved. Similarly, specialists who have inadequate skills in research and opportunities for training have 1.67 and 1.83 times odds of not involving in research compared to who are involved respectively (Table III).

Barriers faced by specialists in government hospitals with Clinical Research Centres (CRCs) vary from those working in hospitals without CRCs. Significantly less specialists from hospitals with CRCs face barriers such as lack of funds for research, lack of access to expertise, software or statistical analysis and lack of mentors (p value< 0.005) (Table V).

Facilitators or 'Motivators' for Specialists in Government Hospitals
The top-ranked facilitators or motivating factors for research involvement which emerged in this survey are "potential to benefit patients and institution" and "for professional development and peer recognition". These are followed closely by recognition of research achievement for promotion, Ministry support to present research projects at international conferences/scientific meetings and consideration for research scholarships. Financial incentives, seeing colleagues with research achievements and getting CME credits emerged as the less important facilitators.

DISCUSSION

This study is focusing on attitudes and barriers towards research faced by of specialists in government hospitals in Malaysia. A similar study was conducted locally involving two major hospitals in Penang state but includes all the doctors in the hospitals.[7] In contrast; our study provides an invaluable insight into the attitudes, barriers and facilitators towards research of specialists working in public hospitals in northern states of Peninsular Malaysia.

Most of the respondents has a positive attitude towards research and believes that research benefits patients and society as well as help in their professional development. However, less than half was involved in any research at time of study. Majority of our respondents are specialists but their involvement in current research is less compared to the head of departments and consultants. This could be the workload faced by the specialists in the public hospitals and with the current situation where specialists working in public hospitals in Malaysia do not have protected time to conduct their own research. Hence, even though the study findings shows majority of specialists obtained their research experience during postgraduate, they are unable to be involved in research once they are into clinical work.

More than one third thinks that under their present working conditions, it is unlikely they will participate in research in the near future. This may be because more than half think research is not one of their job functions. Noting the positive perception towards research, it would be worthwhile to implement specific strategies to increase the involvement of this significant group of specialists in research.

Another main objective of this study was to assess the barriers of which inadequate opportunities for training to have statistically significant difference between those involved in research versus not. This barrier was also reported in other studies.[6,7,9,11] Our study also found that specialists who desire for work and life balance tend to be not involved in research. Time is identified as one of the characteristics of research productivity.[15] More than half of respondents feel that research is too difficult and time consuming, which is similar to reported by other studies.[6,8,9,11,13,14]

This study was also able to identify the barriers faced by specialists in government hospitals with Clinical Research Centres (CRCs) and without CRCs. Specialists from hospitals with CRCs significantly face fewer barriers in terms of funds for research, access to expertise, software or statistical analysis and mentors. Even though the study found only 10% difference, it shows that the services provided in the CRCs are being utilised by the specialists. This will further promote the services provided by CRCs which eventually will increase the use of services and resources in CRCs. Thus, this will increase specialist involvement in research.

To increase specialist participation in research, steps should be taken to reduce the various barriers cited by the respondents. Clinical Research Centres in public hospitals can play a bigger role in reducing the barriers such as improving and increasing awareness of available resources services and training. This is just as important as providing for real lack of resources. In our study, every state had CRC, one in Perlis, one in Kedah, two in Penang and three in Perak. Improving manpower/work distribution, research leadership and mentoring is also vital to improve the research environment. Senior and experienced investigators can do this by taking young specialists under their wings and train them as co-investigators. Scheduling dedicated doctors to run clinical trial clinics may also be a realistic option for some hospitals. Another worthwhile step is to encourage research collaboration with universities and other agencies as it leads to sharing of resources and better research output. Research collaboration has been shown to improve quality and impact of research findings.[16]

The study also reveals the facilitators or factors that motivate doctors to conduct research. Most of our specialists are motivated to do research for altruistic reasons and desire for professional improvement. For long-term productivity, intrinsic motivation is far more powerful than external

rewards. Many researchers work long and hard because of the satisfaction of doing research, including developing and exercising high-level skills, discovering or developing knowledge and being part of a socially worthwhile enterprise.[17] Nevertheless, to capture the initial interest of our specialists to conduct research, external incentives may need to be looked at. This study highlights important facilitators for specialists such as recognition of research achievement for promotion, Ministry support to present research projects at international conferences/scientific meetings and consideration for research scholarships. The Ministry of Health can take positive steps to look into these external incentives that are more tangible as a form of encouragement to specialists.

Based on findings of the study, suggested strategies to increase specialist involvement include:

i. To increase awareness and accessibility to resources such as funding, statistical support and journals.
ii. To ensure more equitable manpower and work distribution including scheduling dedicated doctors to run trial clinics, planning protected time for research
iii. To improve research leadership and coordination at departmental levels.
iv. To increase research training opportunities for specialists.
v. To encourage research collaboration with universities/external agencies.
vi. To have a more efficient and user-friendly system for research approvals.
vii. To foster the spirit of 'mentoring' in MOH institutions.
viii. To establish research as one of KPIs for each institution.
ix. To introduce 'tangible facilitators' as an encouragement to specialists
    - Recognition of research achievements for promotion
    - Ministry support to present research at international meetings
    - Consideration for research scholarships.

The study found that more than half of the specialists were not involved in any form of research. Taking into account the amount of time spent for clinical work, involving in research may not be an option for most of them from this group. However, for further development in clinical work, promotion in job and self-development, research is the way to go for specialists working in public hospitals. With the above suggestions, it is hoped that necessary actions will be taken to promote specialist involvement in research.

The present study is subject to the limitation that it may not be applicable to specialists in other parts of the country with different working cultures and environments. However, the high response rate of this study gives a strong indication of the perceptions of public sector specialists in the northern states.

CONCLUSION

This study provided valuable insights into the attitude, barriers and facilitators of specialists working in the government hospitals towards clinical research. The findings of the study can be used to formulate strategies to increase specialist involvement in research in public hospitals.

It is pertinent that more than half of specialists surveyed were not involved in any form of research at the time of the study. It is also significant that the majority of these specialists who were not involved in research belong to the 30-45 year age group. Steps need to be taken to get this group of young specialists on board for their role is critical in the development and sustainability of research in their hospitals in the future.

ACKNOWLEDGEMENTS

The authors would like to thank all the specialists who participated in the survey, the Hospital Directors of the participating sites and State Health Directors of Perak, Penang, Kedah and Perlis. We also would like to acknowledge the Deputy Director General of Ministry of Health, Malaysia for granting the approval to publish this article.

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