

ORIGINAL ARTICLE

THE INVOLVEMENT OF DOCTORS IN RESEARCH ACTIVITIES IN TWO MAJOR HOSPITALS IN PENANG, MALAYSIA

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ABSTRACT

Majority of doctors show no interest in research although research is now a requirement and is being done in every field of medicine. The objective of this survey was to describe the involvement in research activities among doctors in Penang and Seberang Jaya hospitals in Penang. A self-administered questionnaire was used. A total of 302 doctors participated in the survey. The differences in age ($p < 0.001$), years since graduation ($p = 0.001$), occupation ($p < 0.001$), post graduate qualification ($p = 0.001$) and career focus ($p = 0.005$) were statistically significant for the involvement in research activities. Respondents who had additional training in statistics (OR 2.86 95% CI 1.76; 4.67), who read journals regularly (OR 3.79 95% CI 2.29; 6.27), who were confident in interpreting medical literature (OR 3.08 95% CI 1.84; 5.17), interested in a career in research (OR 7.35 95% CI 4.26; 12.68) and who had knowledge in the use of statistical packages (OR 11.10 95% CI 6.29; 19.60) were more likely to be involved in research. By hierarchy, having knowledge in statistical packages (aOR 11.57 95% CI 5.49; 24.42), interested in a career in research (aOR 8.54 95% CI 3.99; 18.28) and having a post graduate qualification (aOR 1.48 95% CI 1.01; 2.16) were significant associated factors. It is imperative that doctors be given ample opportunity to attend research methodology training programmes to increase their participation in research activities.

Key words: Research, doctors, Penang, Malaysia.

INTRODUCTION

In the present era of evidence based medicine, doctors need to keep abreast of recent knowledge in the field of medicine. In most developed countries research is an important component of being a medical practitioner, however, research in most developing countries including Malaysia is in a budding stage. Conducting research has many benefits. Researchers become knowledgeable and even authorities in the subject they research. Research helps the investigator become disciplined, have an open mind and be inquisitive¹. Physicians may pursue research activities to achieve greater job satisfaction which in turn becomes a motivating factor for them to continue working in academic and general hospital systems²⁻⁴. Research is also usually related to peer recognition and promotion in most countries including Malaysia⁵.

However there is a decline in research activities⁶. Studies show that generally doctors prefer to be clinical oriented physician and are less inclined to participate in research. Research which is usually conducted during their spare time only plays a small role in their professional activities and the importance of research is not recognized and

publications are just a mean of improving their curriculum vitae⁷⁻⁹. Among the reasons for the lack of participation in research is that doctors perceive research as an unrecognized effort which is not beneficial¹. Admittedly conducting research is not easy. It is time consuming and requires much dedication. Research also requires the researcher to be equipped with the knowledge of biostatistics to draw conclusions from the results obtained¹ but only few have any formal training in research methods⁷.

The Ministry of Health Malaysia (MOH) encourages medical research to determine the extent of health problems, its control measures and to meet the changing needs of the country¹⁰. Most major hospitals of the MOH have clinical research centres. In 2009, most of the research submitted to the ministry was clinical followed by public health/epidemiology. The most common clinical research was clinical trials followed by clinical epidemiology and most of the research was self-funded followed by industry grant and MOH grant¹⁰. This is not surprising considering Malaysia's expenditure on research and development was a measly 0.5% of the GDP¹¹.

The objective of this survey was to describe the involvement in research activities among the doctors working in two major government hospitals in Penang, Malaysia.

METHODOLOGY

Study design

This cross sectional study was conducted from January to March 2012.

Setting

This survey was conducted in one of the 13 states in Malaysia called Penang. Because of time and monetary constraints, respondents were recruited from two main government hospitals i.e. Penang Hospital and Seberang Jaya hospital. There are six government and 10 private hospitals in the state. Penang Hospital is the largest hospital in the state located on the island whereas Seberang Jaya hospital is the second largest hospital located on the mainland. There were 32,979 doctors serving in the country in 2009. The doctor to population ratio was 1:827 for Malaysia whereas the doctor population ratio for Penang was 1:740¹². According to the biennial report from the Malaysian Medical Council, 23,055 annual practicing certificates were issued in 2010, out of which 1677 annual practicing certificates were issued to doctors practicing in Penang¹³.

Sampling

There were 690 and 280 doctors in Penang and Seberang Jaya hospital respectively. Due to the nature of the study, a convenience sampling method was employed. The human resources training unit of the two hospitals announced to the doctors in the hospitals concerning the survey and distributed the questionnaires to those doctors who were willing to participate in the study. The units distributed 400 questionnaires to doctors in Penang hospital and another 150 questionnaires were distributed in Seberang Jaya hospital. The human resources training units of the two hospitals also helped to collect the completed questionnaires a week after the questionnaires were distributed.

Instrument

A self-administered questionnaire was prepared. This questionnaire included information on the baseline profile of the participants concerning their

demographic information as well as information pertaining to the participants practice and their activities related to research. Information sought in the questionnaire included- any additional training the participants received upon graduation, whether they regularly read medical journals, were they confident in interpreting medical literatures, were they interested in a career in research, had they ever published an article in a journal and have they ever used a statistical package.

Analysis

Data was analysed descriptively using SPSS version 18. The result was tabulated and cross tabulated. Chi square test was used to analyse the relationship between the variables. A P value of <0.05 was considered statistically significant. An estimation of the likelihood of being involved in research activity among the participants was done using odds ratio. Regression analysis was done to determine the significant associated factors.

Ethics

A detailed explanation concerning the purpose of the survey and its potential benefits and what was required from the participants was given to them along with the questionnaire. The anonymity of the participants is totally assured.

RESULTS

A total of 302 replies were received by the end of March 2012 giving a response rate of 31.1%, most of those who did not respond were house officers. As shown in table 1, majority of the respondents were female (53.3%), Chinese (51.7%) and in the age group ≤ 30 years old (58.9%). Most were medical officers (53.0%), having a clinical post graduate qualification (55.6%), have no interest in a career in research (52.6%) and were interested in a non-academic clinical career (62.9%). Majority of the participants had no additional training in statistics (57.6%), did not read journals regularly (52.3%) and were not confident in interpreting medical literature (70.9%). Only 105 (34.8%) respondents were involved in research, mostly in clinical research (77.1%) specifically clinical trials (42.6%). Only 67 (22.2%) respondents had published an article in a medical journal and only 94 (31.1%) ever used a statistical package.

Table 1. Baseline profile of the participants

Variables	Frequency	Percentage
Gender		
Male	141	46.7
Female	161	53.3
Race		
Chinese	156	51.6
Indian	79	26.2
Malay	67	22.2
Age		
≤30	178	58.9
31-40	72	23.9
41-50	30	9.9
≥51	22	7.2
Occupation		
Medical officer	160	53.0
House officer	64	21.2
Consultant	55	18.2
Post graduate resident	23	7.6
Post graduate qualification		
Clinical	168	55.6
None	126	41.7
Non clinical	8	2.7
Career focus		
Clinical non academic	190	62.9
Clinical academic	96	31.8
Research academic & Public health	16	5.3
Additional training in statistics		
No	174	57.6
Yes	128	42.4
Read journals regularly		
No	158	52.3
Yes	144	47.7
Confident in interpreting medical literatures		
Not confident	214	70.9
Confident	88	29.1
Interested in a Career in research		
No	159	52.6
Yes	143	47.4
Involved in research currently		
Yes	105	34.8
No	197	65.2
Field of research conducted		
Clinical research	81	77.1
Basic science research	20	19.0
Clinical and basic science research	4	3.9
Specific areas in which research was conducted (multiple response)		
Clinical trials	45	42.6
Preventive medicine	9	8.6
Diagnostics	14	13.3
Screening	9	8.6
QOL	11	10.5
Epidemiology	28	26.8
Published article in journals		
No	235	77.8
Yes	67	22.2
Used a statistical package		
No	208	68.9
Yes	94	31.1

As shown in table 2, research involvement was higher in the age groups 31-40 followed by 41-50, ≥ 51 and ≤ 30 . This differences in age was found to be statistically significant ($p < 0.001$). More participants who had graduated 5-10 and ≥ 10 years were involved in research as compared to those who graduated ≤ 4 years ($p = 0.001$). Participants who were mostly involved in research were post-grad residents followed by consultants, medical officers and house officers. This differences was also statistically significant ($p < 0.001$). Participants with clinical and non-clinical post-graduate qualification ($p = 0.001$) and participants whose

career focus was clinical non-academic and research academic and Public health were more involved in research ($p = 0.005$). Respondents who had additional training in statistics (OR 2.86 95% CI 1.76; 4.67), who read journals regularly (OR 3.79 95% CI 2.29; 6.27), who were confident in interpreting medical literature (OR 3.08 95% CI 1.84; 5.17), interested in a career in research (OR 7.35 95% CI 4.26; 12.68) and who had knowledge in the use of statistical packages (OR 11.10 95% CI 6.29; 19.60) were more likely to be involved in research.

Table 2. Factors associated with the 'involvement in research' among doctors in two government hospitals in Penang

Variable	Involved in research n=105 f (%)	Not involved in research n=197 f (%)	Total N=302 f (%)	χ^2 /p value	OR (CI 95%)
Sex					
Male	51 (36.2)	90 (63.8)	141 (100)	0.229	
Female	54 (33.5)	107 (66.5)	161 (100)	/0.63	
Race					
Malay	21 (31.3)	46 (68.7)	67 (100)	2.752	
Chinese	61 (39.1)	95 (60.9)	156 (100)	/0.13	
Indian	23 (29.1)	56 (70.9)	79 (100)		
Age					
≤ 30	43 (24.2)	135 (75.8)	178 (100)	24.452	
31-40	40 (55.6)	32 (44.4)	72 (100)	/ <0.001	
41-50	14 (46.7)	16 (53.3)	30 (100)		
≥ 51	8 (36.4)	14 (63.6)	22 (100)		
Years since graduation				16.496	
≤ 4	41 (24.7)	125 (75.3)	166 (100)	/0.001	
5-10	30 (47.6)	33 (52.4)	63 (100)		
≥ 11	34 (46.6)	39 (53.4)	73 (100)		
Occupation					
House Officer	14 (21.9)	50 (78.1)	64 (100)	22.015	
Medical officer	8 (30.0)	112 (70.0)	170 (100)	/ <0.001	
Post grad resident	15 (65.2)	8 (34.8)	23 (100)		
Consultant	28 (50.9)	27 (49.1)	55 (100)		
Post graduate qualification					
Clinical	74 (44.0)	94 (56.0)	168 (100)	15.149	
Non clinical	3 (37.5)	5 (62.5)	8 (100)	/0.001	
none	28 (22.2)	98 (77.8)	125 (100)		
Read Journals regularly					
Yes	72 (50.0)	72 (50.0)	144 (100)	28.156	3.79
No	33 (20.9)	125 (79.1)	158 (100)	/ <0.001	(2.29; 6.27)

Table 2 (continued)

Variable	Involved in research n=105 f (%)	Not involved in research n=197 f (%)	Total N=302 f (%)	x ² /p value	OR (CI 95%)
Confident in interpreting medical literatures	47 (53.4)	41 (46.6)	88 (100)	19.027	3.08
Confident	58 (27.1)	156 (72.9)	214 (100)	<0.001	(1.84;5.17)
Not confident					
Interested in a career in research					
Yes	81 (56.3)	62 (43.4)	143 (100)	57.307	7.35
No	24 (15.1)	135 (84.9)	159 (100)	<0.001	(4.26;12.68)
Know how to use a statistical package					
Yes	67 (71.3)	27 (28.7)	94 (100)	87.208	11.10
No	38 (18.3)	170 (81.7)	208 (100)	<0.001	(6.29;19.60)

Logistic regression was conducted using age group, years since graduation, occupation, post graduate qualification, career focus, training in statistics, read journals regularly, confidence in interpreting medical literature, interest in a career in research and knowledge in the use of statistical packages as possible independent associated variables (table 3). The model had an accuracy of 85.1%, -2 log likelihood 236.557,

Cox & Snell R square 0.399, Nagelkerke R square 0.550 and Hosmer and Lemeshow test 0.681. By hierarchy having knowledge in statistical packages (aOR 11.57 95% CI 5.49;24.42), interested in a career in research (aOR 8.54 95% CI 3.99;18.28) and having a post graduate qualification (aOR 1.48 95% CI 1.01;2.16) were significant predictor variables.

Table 3. Independent factors associated with being involved in research

Variable	B	Wald	Sig	Exp B	95% CI	
					Lower	Upper
Age	-0.11	0.11	0.74	0.89	0.46	1.73
Years since graduation	-0.36	0.79	0.37	0.69	0.31	1.55
Occupation	0.10	0.002	0.96	1.01	0.68	1.51
Post graduate qualification*	0.39	4.03	0.04	1.48	1.01	2.16
Career focus	1.18	0.38	0.53	1.20	0.67	2.14
Training in statistics	0.48	1.89	0.17	1.62	0.82	3.20
Read journals regularly	0.68	3.41	0.07	1.98	1.96	4.07
Confidence in interpreting medical literatures	0.45	0.01	0.91	1.05	0.49	2.22
Career in research*	2.15	30.53	<0.001	8.54	3.99	18.28
Knowledge in statistical packages*	2.45	41.32	<0.001	11.57	5.49	24.42

*significant

DISCUSSION

Depending on the location and the study subjects, studies have shown the participation in research to range from 13 to 90%^{7,14-18}. Involvement in research among doctors in this study was a mere 34.8% probably because most doctors prefer to be clinicians only as shown by surveys conducted among Australian, Danish and US doctors, possibly because most doctors do not perceive any rewards associated with research^{8,9,19}.

Lack of quality research in developing countries is probably due to the lack of research skills²⁰. Adequate knowledge in biostatistics and research methodology is imperative for research²¹. Experience in performing literature search, understanding common statistical finding in journals, preparing protocols are imperative to performing research and this skills are only available to one who has undergone training in research methodology including training in the use of statistical software. This would explain the result of the present study which suggests that the doctors who were involved in research were more likely to be among those who had some training in research methodology which would enable them to use statistical software's and read journals. These are the people who would understand the benefits of research and would thus choose a career in research.

For a doctor to be involved in research it is imperative to have knowledge in biostatistics²² but due to the difficulty in understanding and lack of motivation and interest to learn the subject, doctors are not getting involved in research. It was reported that among the most important limitation of doing research in Taiwan and Pakistan was the lack of clinical research methodology programmes^{23,24}. In a cross sectional survey to determine the willingness of 310 physicians in 31 departments in Kyoto University hospital to participate in clinical research showed that less than 20% had specific training regarding clinical research and most reported that they needed to acquire concepts and skills regarding clinical research especially statistics²¹. Similar obstacle was noted in the west. A survey among junior anaesthetist in St Thomas' hospital in London

showed few had received formal training in research methods⁷. In another study conducted in the United Kingdom to determine the attitudes and stated practices towards research among 249 General practitioners, found that although majority were interested in research but only 38% reported to had undergone training in research¹⁸. In Manhattan, United States, 80% of the community clinicians in a study lamented inadequate training in research methods as a reason for not getting involved in research²⁵.

Students doing undergraduate or post graduate courses are required to be knowledgeable in medical research and methodology. Most postgraduate programmes including those in Malaysia are required to have Evidence Based Medicine and journal clubs²⁶⁻²⁹ and require students to undergo formal biostatistics and research methodology training. Hence, it is not surprising to find in the present study, doctors with postgraduate qualification were more likely to be involved in research. A survey to determine the factors related to research activities among primary care doctors in Catalonia, Spain found a significant link between publishing and postgraduate residence training³⁰. In Pakistan most of the published papers were from post graduate students who were required to produce papers³¹. In a cross sectional study conducted in four medical universities/teaching hospitals in Pakistan among 176 junior faculty members found that a highly significant factor associated with research involvement was research training during the post graduate period¹⁶. In another study in Pakistan among post graduate medical trainees found that inadequate research training was a major reason for poor involvement in research activities and poor journal reading habits³².

Limitations

There are numerous limitations in this present survey notably the sampling method and the sample size. Because the sampling method is non-probabilistic, there is a high risk of bias and generalizability in this survey. The small sample size due to non-response is another risk for bias. All efforts were taken to enrol as many doctors as possible into the study. The human resources training unit of the hospitals were involved to recruit as many doctors as possible, however this too proved futile.

CONCLUSION

It is imperative that doctors be given ample opportunity to attend research methodology training programmes to increase their participation in research activities.

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