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Perception and attitudes of medical students towards research and survey

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ABSTRACT

Background

Research experience has traditionally been recognized as an important part of medical education. This research would mainly discuss about the medical students attitude towards research and surveys which comprises of perception of medical students towards research, their attitude towards research, the barriers faced by the students to conduct a research as well as their level of research guidance and the most common type of research done.

Objective

The aim of this paper is to determine the perception and attitudes of medical students towards research among Malaysian medical students from both public and private universities.

Methods

A set of questionnaire consisting of 40 close-ended questions were distributed among the targeted medical students. Through convenience sampling method, three universities from both public and private universities were chosen. The data were analyzed using Statistical Package for the Social Sciences (SPSS) program Version 18.

Results

Total of 282 (94%) questionnaires were returned complete. The number of students from clinical year three, four and five were evenly distributed with 33.3%, 34.8% and 31.9% respectively. 187 students out of 282 (66.31%) students said that research is relevant in their life. The most significant attitude of students towards research is whether they were persuaded by enthusiastic mentor to participate in research. The greatest barriers towards research are lack of funding, difficulty following-up with patients and difficulty obtaining approval.

Conclusion

The results of the research outline the significance in perception and attitude of local university students from both public and private university. The final results disagree with our hypothesis. Overall, medical student from various universities have better positive perception and attitude towards research.

Keywords: Medical student, Perception, Attitude, Research, Barriers.

INTRODUCTION

Research experience has traditionally been recognized as an important part of medical education. [1] With increasing emphasis being placed upon evidence-based medicine and the application of scientific research to clinical practice, it is becoming increasingly important for medical professionals to possess sound understanding of scientific principles and methods, and to be skillful at acquisition and critical appraisal of new information. [2-4]

Research experience, which emphasizes intellectual independence, helps to develop these skills. [1] Studies have shown that research experience during medical school is strongly associated with postgraduate research initiatives. [5]

Research is the process of establishing new facts or conclusion through systematic investigations and study of material sources. It is done when a question or problem arises and is needed to be discussed in order to arrive into conclusion. There are many types of research that can be done [8-10]. However the research that shapes the human life into better health and better future is the medical research. Medical research is the basic research, applied research, or translational researches conducted to aid and support the development body of knowledge in the field of medicine. [6]

As a whole, when discovered in the current post-globalization era of the century, despite knowing the importance and significance of researches there are only quite a number of studies which are done to know the Medical Students Attitude towards Research and Surveys specifically [11-15]. This research would mainly discuss about the medical students attitude towards research and surveys which comprises of perception of medical students towards research, their attitude towards research, the barriers faced by the students to conduct a research as well as their level of research guidance and the most common type of research done [16-20].

LITERATURE REVIEW

Introduction

Research and survey practice has conventionally been recognized as a significant

fragment of medical teaching. [7] With growing stress being placed on evidence-based medicine besides the application of scientific research to clinical training, it is becoming progressively significant for medical experts to own a comprehensive understanding of scientific ethics, values and methods, and to be dexterous at gaining and critical evaluation of fresh info. [2-4]

Research knowledge, which mainly highlights intellectual independence, aids to cultivate these abilities. [1] Various studies has been done in all around the world to understand the perception, attitude, the barriers and also the research experience among medical students.

Health research is vital to address the community health difficulties and requirements, and also to advance health care. [6] One long-term strategy for promoting health research is to target medical students early in their careers. [7, 8]

Literature review

A study conducted in Canada among medical students has revealed that despite 87% of respondents reporting that they had been involved in some degree of research prior to medical school, 43% report that they have not been significantly involved in research activity during medical school and 24% had no interest in any participation. There were significant differences in the attitudes towards research endeavours during medical school between students in their fourth year compared to second year. The greatest barriers to involvement in research in medical school appear to be time, availability of research mentors, formal teaching of research methodology and the perception that the student would not receive appropriate acknowledgement for work put towards a research project. [5]

Besides that, another study that was conducted in University of Alexandria showed that students showed high levels of interest in research and positive attitudes towards integrating research activities into undergraduate medical curricula. However, a considerable proportion of students were not fully aware of the benefits of engaging undergraduate students in research. Students believed that the main problems facing students' research are: curriculum overload, time restriction, inadequate training in research, lack of staff

guidance and cooperation, lack of interest and motivation, and lack of incentives. The study also revealed that the medical students are becoming more enthusiastic about getting involved in research [21-23].

On another note, a study that was conducted in Shiraz concludes that a total of 384 questionnaires were returned complete [24-27]. Mean student scores for attitude, knowledge and barriers were 68.97 ± 12.56 , 70.99 ± 20.97 and 75.27 ± 15.38 , respectively. On the knowledge parameter, 77.8% of students' scores fell above the middle of the possible attainable score, but 90% of attitude scores came in at below the middle of the possible attainable score. Undergraduate students (70.27 ± 12.00) showed a more positive attitude to research than postgraduate students (65.57 ± 13.06) ($p = 0.001$). Female students (72.97 ± 20.54) had greater knowledge than males (67.09 ± 21.56) ($p = 0.010$). Many barriers were highlighted by students such as lack of funding support and lack of time for research [28-32].

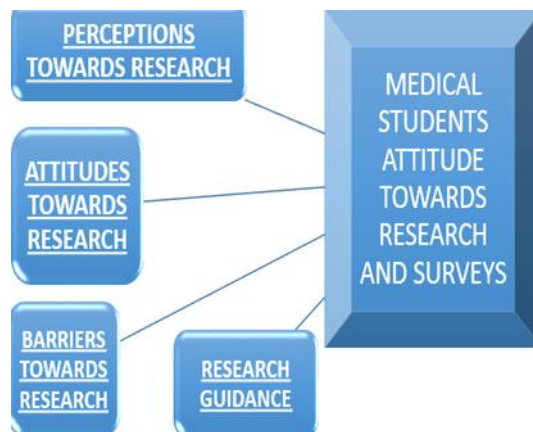
Moreover, there was another research that was conducted in Saudi Arabia where hundred and seventy two students participated in the study, with 97 males (65.5%). The majority of the students agreed that research is important in the medical field (97.1%, 167/172). A total of 67.4% (116/172) believed that conducting research should be mandatory for all medical students. During medical school, 55.3% (88/159) participated in research. The obstacles that prevented the students from conducting research included lack of professional supervisors (84.7%, 143/169), lack of training courses (88.8%, 151/170), lack of time

(72.3%, 123/172) and lack of funding (54.1%, 92/170). Although the majority of students believe that research is important in the medical field, only around half of the students participated in research during medical school.

On another study that was conducted in New Zealand, among the 756 students enrolled for the 2007 academic year, 558 responded, with an overall response rate of 74%. Twenty-five percent of students had participated in some form of research activity during medical school, with summer studentships being the most common type of research experience. Seventy percent of all students surveyed expressed interest in participating in research during medical school. Although 68% of respondents were aware of the intercalated research degree option at the School of Medicine, only 8.6% expressed interest in undertaking this option. The most common reasons for not pursuing an intercalated degree option were lack of interest in this format of research experience (46%), social reasons (29%), and financial reasons (27%). There was no widespread support from the students for having research training as a compulsory part of medical school curriculum.

With respect to long-term career plan, 35% of respondents planned to be involved in research throughout their medical career, and 22% were interested in pursuing higher degrees (MD or PhD) following graduation. However, more students rated lifestyle (84% affirmative) and earning potential (43% affirmative) as more important factors than opportunity for research (23% affirmative) when choosing a career specialty.

Conceptual framework



OBJECTIVE

General objective

To recognize and understand medical students attitude towards research and surveys.

Specific objective

1. Determine the perception of medical students towards research.
2. To determine the attitudes of medical students towards research.
3. To identify the barriers faced by to medical students when conducting research.
4. To know the level of research guidance and the most common type of research done by medical students.

HYPOTHESIS

Medical students do not have a positive perception and attitude towards research and surveys.

METHODOLOGY

Study design

This was a quantitative cross-sectional survey conducted on all male and female medical students to assess the perception and attitudes of medical students towards research and surveys. The target population were clinical year medical students from both public and private universities around

Malaysia who have participated in research project. Convenience sampling method was used to collect the data. Demographic backgrounds of the students were described through descriptive study.

Sample population

Our target population was clinical year medical students. Three public universities chosen were Universiti Sultan ZainalAbidin, UniversitiSains Malaysia, and Universiti Malaysia Sabah. The private universities included Masterskill, Melaka Manipal Medical College and PURCSI. A total of 50 students were targeted for each university making the participants a total of 300 students. Return rates of the questionnaire were 94% with the total of 282 out of 300 targets.

Inclusion criteria: Students previously involved in research projects.

Survey instrument

Universities of choice were chosen using Research Randomizer. Questionnaire was created in English as it is the language of curriculum. The questionnaire was pilot-tested among a small group of Masterskill students. The result of Cronbach's alpha was 0.708.

Questionnaire design

The questionnaire designed consisted of 40 close-ended questions adapted from previous studies. A 4-page questionnaire was be distributed

to participants with the first page containing a consent letter. Second page had questions required to assess the participants' demographic data such as year/semester and university. The remaining questions were divided into four main categories. The first part of questionnaire addressed the perception of medical students towards research and surveys. The second part focused on the attitudes of medical students towards research and surveys. Barriers faced by students during participation in research projects were assessed in the third section. The last category involved questions regarding research guidance and the type of research conducted before. The questionnaire was designed in a yes/no format.

Data collection

The questionnaire was created with the reference of previous studies. The questions were modified to fit our target population. The survey was pilot tested on 15 students from Masterskill University College. It was carried out to estimate the time taken to answer the questionnaire and to assess the understanding of the questions by participants so that it could be adjusted

consequently. During the research, the participant was asked to return the questionnaire within the same week. The data from all six universities were combined for statistical analysis.

Statistical analysis

Statistical Package for the Social Sciences (SPSS) program Version 18 was used for statistical analysis of the final data. The statistical significance on a p-value <0.05 was considered as the standard criteria. Demographic data of the students was described through descriptive study.

Ethical consideration

The rights of the study participants was fully protected as the protocol was reviewed by Medical Research Ethical Committee (MREC). Following the approval from MREC, National Malaysian Research Register (NMRR) registration was carried out. Then, the questionnaire was distributed to all the targeted students from their respective universities. A written informed consent form was attached on every set of questionnaire to ensure that the participation is completely voluntary and confidential.



RESULTS

Table 1 Socio-demographic details

YEAR	FREQUENCY (n)	PERCENTAGE (%)
3	94	33.3
4	98	34.8
5	90	31.9
UNIVERSITY	FREQUENCY (n)	PERCENTAGE (%)
PUBLIC	150	53.2
PRIVATE	132	46.8

Table 1 portrays a total data of 282 clinical year medical students from 6 different universities which comprises of 3 public universities of 150 students and 3 private universities of 132 students from Malaysia was analysed. Table 1 shows the distribution of the socio-demographic variables of the study which includes the year of clinical practice and also the type of university students are

enrolled in. The distribution of students from different education level of the respondent are almost similar at 33.3%, 34.8% and 31.9% for Year 3, 4 and 5 respectively. There were more students from public medical universities, 150 students (53.2%) compared to the private medical universities, 132(46.8%).

Table 2 perceptions towards research

QUESTIONS	YES n (%)	NO n (%)
Is research important in medical field?	202 (71.63)	80 (28.37)
Should research be mandatory for all medical students?	171 (60.64)	111 (39.36)
Should their research experience be an important criterion for acceptance in residency/houseman ship?	140 (49.65)	142 (50.35)
Is research interesting?	155 (54.96)	127 (45.04)
Is research stressful?	196 (69.50)	86 (30.50)
Does research apply in daily life?	165 (58.51)	117 (41.49)
Is research complicated?	163 (57.80)	119 (42.20)
Do students benefit from research?	168 (59.57)	114 (40.43)
Is it difficult to understand the concepts of research?	200 (70.92)	82 (29.08)
Is research valuable?	222 (78.72)	60 (21.28)
Will the skills acquired in research be helpful to you in the future?	220 (78.01)	62 (21.99)
Is the knowledge from research is as useful as writing?	129 (45.74)	153 (54.26)

Does research-orientated thinking plays an important role in your daily life?	184 (65.25)	98 (34.75)
Is research irrelevant to your life?	95 (33.69)	187 (66.31)
Should research be necessary in your professional training?	193 (68.44)	89 (31.56)
Do you feel insecure concerning the analysis of research data?	188 (66.67)	94 (33.33)

Table 2 shows the number of participation and distribution of respondents on the perceptions towards research questions. When asked if research was important in medical field a total of 202 respondents out of 282 (71.36%) medical students agreed to it. Besides that, when the respondents were asked if their research experience should be made mandatory for all medical students, 171 students (60.64%) agreed to the statement that research should be an made mandatory for all medical students. Moreover, when asked if research is stressful, a total of 196 respondents (69.50%)

agreed to the statement that research is stressful. A total of 200 students (70.92) agreed that it is difficult to understand the concepts of research. When the respondents were asked, ‘Is research valuable’, a total of 222 (78.72%) medical students agreed to the statement. Besides that, when asked if the skills acquired in research be helpful to them in the future, a total of 220 respondents (78.01%) agreed to the statement. Furthermore, high number of students with a total of 188 (66.67) out of 282 students feel insecure regarding the analysis of research data.

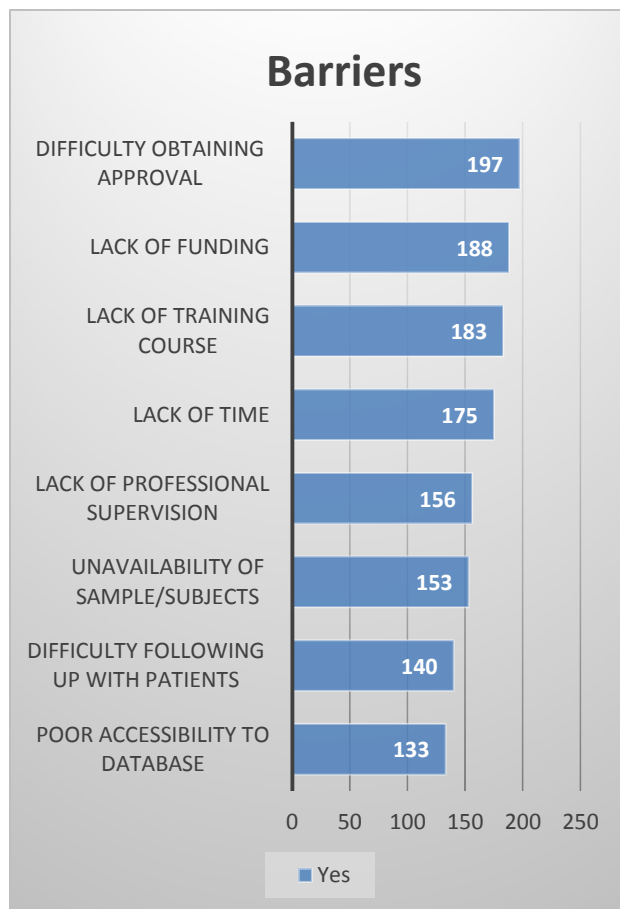
Table 3 attitudes towards research

QUESTIONS	YES n (%)	NO n (%)
Research is made mandatory in curriculum.	180 (63.83)	102 (36.17)
Research helps to facilitate acceptance to residency program.	158 (56.03)	124(43.97)
Research has positive achievement on resume.	235 (83.33)	47 (16.67)
Research fulfils my interest.	150(53.19)	132(46.81)
Research improves my research skills.	191 (67.73)	91 (32.27)
Research helps to attain a publication.	225 (79.79)	57 (20.21)
Research reinforces teamwork spirit.	215 (76.24)	67 (23.76)
Research helps develop interest in career in research/academic medicine.	139(49.29)	143(50.71)
I was persuaded by enthusiastic supervisor/mentor.	194 (68.79)	88 (31.21)
Research was recommended by others.	120(42.55)	162(57.45)

From Table 3 the number of participation and distribution of respondents that shows their attitudes towards research can be seen. When asked if they participated in research because it was made mandatory in curriculum, a total number of 180 respondents (63.83%) agreed to the statement. An extremely high number of students with a total of 235 (83.33%) students agreed that they participated in research as it has a positive achievement on

resume. Furthermore, when asked if, ‘Research helps to attain a publication’, a total number of 225 respondents (79.79%) gave a positive reaction towards the statement. Not only that, when they were posed with the statement if ‘I was persuaded by enthusiastic supervisor/mentor’, a total of 194 students (68.79%) agreed to the statement positively.

Bar chart 1: Barriers towards research



Bar Chart 1 reveals the number of participation and distribution of respondents who responded to barriers that are present when a research is conducted. One of the most prominent barriers faced by the medical students in conducting a research is the difficulty obtaining approval. In total of 282 respondents, a total of 197 students (69.86%) responded positively to the statement. Besides that, another major barrier faced by the students is lack of funding. A total of 188 respondents (66.67%) gave a yes answer to the

option of lack of funding. Moreover, another withholding factor of research conduction is lack of training course. A total of 183 respondents (64.90%) states that one of their major barrier to conduct a research is lack of training course. On the other hand, one more factor that acts as a barrier towards research is the lack of time. A total number of 175 students (62.06%) states that one of the barriers towards conducting research would be lack of time.

Table 4 research guidance

QUESTIONS	YES n (%)	NO n (%)
Was there adequate guidance to do a research?	172	60.99
The college has adequate infrastructure to conduct a research.	126	44.68

You have been exposed to basic and advanced research and statistic tools needed for preparation of the research report.	150	53.19
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Table 4 describes the number of participation and distribution of respondents who responded to their research experience previously. When they

were posed with the statement ‘Was there adequate guidance to do a research?’ a total number of 172 respondents (60.99%) agreed to the statement.

Bar chart 2: Types of research



Bar Chart 2 illustrates that the most common research that is done among clinical year medical is cross-sectional studies (221/282) followed by review articles (105/282).

DISCUSSION

Our study focused on the perceptions, attitudes, barriers and guidance of clinical medical students towards research. This topic is extremely important because understanding the perceptions and attitudes of students toward this issue can lead to improvement of research practices among future physicians. The negative attitudes of medical students towards research have been found to serve as an obstacle to learning associated with poor performance in research. Most of the medical

students are not aware of why research is crucial to health care. (Siemens et al., 2010).

Our results are comparable to the results of a study performed in Canada. This study found that although the majority of medical students felt that participation in research activities was likely beneficial to their education, only 44% felt that research will play a significant role in their future career. However, according to our studies done a total of 202 students out of 282 students (71.63%) from medical university agreed that research is important in medical field. Besides that, when asked if the skills acquired in research be helpful to them in the future, a total of 220 respondents out of 282 respondents (78.01) from medical university agreed to the statement. This shows that our local university medical students agree that research is important as well as it will be helpful in the future.

On another research that was conducted in a medical university in Saudi Arabia a total of 67.4% (116/172) believed that conducting research should be mandatory for all medical students. On this context, from our studies when asked if research should be made mandatory in curriculum a total number of 180 (63.83%) medical university students agreed to the statement that research should be made mandatory in curriculum as they feel it will be beneficial in the field of health sciences.

On the same research conducted in Saudi Arabia, research was done by medical students because they feel it will be facilitating acceptance into a residency program (82.9%, 131/158). Based on our study conducted, when the respondents were asked if their research experience should be an important criterion for acceptance in residency/housemanship, 158/282 respondents (56.03%) agreed to the statement that research should be an important criterion for acceptance in housemanship. This indicates there is a very low participation level of our local university medical students to accept this statement of research would help to facilitate housemanship.

Other than that, in Germany, medical students authored 28% of the publications of one institution, including first authorship in 7.8% of papers (Cursiefen and Altunbas, 1998). Research is not considered a part of the medical curriculum in any developing countries. In a study from India, for example, 91% of interns reported no research experience in medical school (Chaturvedi and Aggarwal, 2001). Thus, students in India are rarely exposed to research at the stage of their academic development when such exposure could encourage further research (Aslam et al., 2005). In our local study, when asked if, 'Research helps to attain a publication', a total number of 225/282 (79.79%) medical university students gave a positive reaction towards the statement. In Malaysia, it seems that our results are similar to the Canadian results where the students conduct a research to attain a research publication has statistical percentage (79.7%, 126/159), where we are in the middle between Germany and India. About 4/5th of the students have been involved with research and participated in writing manuscripts for publication.

Besides that, on the same research done, the obstacles that prevented the students from conducting research included lack of professional

supervisors (84.7%, 143/169) and lack of funding (54.1%, 92/170). Comparatively, in a total of 282 respondents from public and private university, a total of 156 students (55.32%) responded positively to the statement of there is a lack of professional supervision and also a total of 188 respondents (66.67%) states that one of their major barrier to conduct a research is lack of funding. This indicates that the students from our local medical university has lower percentage stating that there is lack of professional supervision compared to the study done in Saudi. However, our local medical undergraduates' states that they have higher percentage of statistics which states that lack of funding is slightly higher compared to the study done in Saudi.

In the Canadian study, lack of time was a significant barrier to pursuing research during medical school as only 31% of all respondents felt there was adequate allotted time for research endeavours (Siemens et al., 2010). Furthermore, only 15% of respondents felt that there was sufficient training in research methodology in medical school, and only 25% agreed that there was adequate training in the critical appraisal of scientific literature. Another perceived barrier to participation in research was the difficulty in attaining a research supervisor; only 44% of respondents agreed that it was relatively easy to find a research mentor (Siemens et al., 2010). In our study conducted, most prominent barriers faced by the medical students in conducting a research is the difficulty obtaining approval for study (197/282), lack of funding (188/282), lack of training course (183/282), lack of time (175/282) and lack of professional supervision (156/282) as a cumulative.

On another note, a study done in Saudi shows that the types of research done commonly among students in medical university are cross-sectional studies followed by a review article. Comparatively, our local study also depicts the same results where majority of medical students were mostly involved in cross-sectional studies (221/282) followed by review articles (105/282).

CONCLUSION

The results of the research outline the significance in perception and attitude of local medical university students. The final results

disagree with our hypothesis. Our research shows that our local university medical students agree that research is important as well as it will be helpful in the future. In our study done, medical students conducted research because it is made mandatory, it as positive achievement on resume and also it was persuaded by enthusiastic supervisors or mentors. Though, the question then arises as what led the students to not have a positive perception towards research. After further investigation, it was found out that barriers such as lack of professional supervision, lack of funding and lack of training courses were the reasons behind it. So, it is important to overcome the obstacles students' face that is needed to motivate students to participate in research.

RECOMENDATIONS

In the present day, a global approach to scientific studies has developed in medical education which leads to increased number of articles being published throughout the world. Lack of student conferences and research workshops on how to write and organize research papers is among the reasons for such negative attitudes (Siemens et al., 2010). The encouragement of those young researchers is not sufficient. This factor results in a decreased number of medical students interested in participating in research. Medical research plays an important role in improving health care services. Newly found findings from research conducted over the past years have helped in attaining better understanding regarding certain diseases and in improvement of treatment plan for patients. Hence,

it is vital to encourage medical students to participate in research and surveys. Various strategies can be taken to serve the purpose of promoting research. We believe that finding ways to overcome the obstacles students face is needed to motivate students to participate in research. To the best of our knowledge, this study is the first to evaluate the perceptions, practices, obstacles and attitudes toward research among medical students in the Malaysia. These efforts could lead to an increased involvement of medical students in research. First and foremost, it is essential to make sure of the availability of adequate infrastructure to conduct any type of research. Facilities such as internet and journals are required in the search of reference for a research. Besides for reference, such resource is also required for registration of their respected research to obtain approval. With proper resources, references can be accessed easily making the research process a smooth one. From our research, it is proven that lack of funding is the barriers in conducting research. Research faculty of medical universities should provide funding to the students to have an improved research cultures and increase students' participation. In addition, students should be given prior exposures on skills required to analysis data. Mandatory course on research skills and community projects should be carried out. Such projects allow students to implement necessary steps of a research project, from initiation of idea until the final report writing. In conclusion, when given the right infrastructure and resources, medical students' perception and attitude can be successfully cultivated.

REFERENCES

- [1]. Solomon SS, Tom SC, Pichert J, Wasserman D, Powers AC: Impact of medical student research in the development of physician-scientists. *JInvestig Med* 51(3), 2002, 149-156.
- [2]. Silcox LC, Ashbury TL, VanDenKerkhof EG, Milne B: Residents' and program director's attitudes toward research during Anesthesiology training: A Canadian Perspective. *Anesthesia and Analgesia* 102, 2006, 859-864.
- [3]. Miller RD: The place of research and the role of academic anesthesiologists in anesthetic departments. *Best Pract Res ClinAnaesthesiol* 16, 2002, 353-370.
- [4]. McKinnon G: "But I just want to be a good clinician": research in Canadian surgical training programs. *Ann R Coll Physicians Surg Can* 35, 2002, 203-206.
- [5]. Lloyd T, Phillips BR, Aber RC: Factors that influence doctors' participation in clinical research. *Med Educ* 38(8), 2004, 848-851.
- [6]. Neilson EG: The role of medical school admissions committees in the decline of physician-scientists. *J Clin Invest* 111, 2003, 765-767.

- [7]. McCrindle BW, Grimes RB: Will pediatric residents do research? A survey of resident's attitudes. *Ann R Coll Physicians Surg Can* 26, 1993, 283-7.
- [8]. Buschbacher R, Braddom RL: Resident versus program director perceptions about PM R research training. *Am J Phys Med Rehabil* 74, 1995, 90-100.
- [9]. Ullrich N, Botelho CA, Hibberd P, Bernstein HH: Research during pediatric residency: predictors and resident-determined influences. *Acad Med* 78, 2003, 1253-8.
- [10]. Gill S, Levin A, Gjurdev O, Yoshida EM: Obstacles to residents' conducting research and predictors of publication. *Acad Med* 76, 2001, 477.
- [11]. Temte JL, Hunter PH, Beasley JW: Factors associated with research interest and activity during family practice residency. *Fam Med* 1994, 26:93-7.
- [12]. Gay SB, Hillman BJ: Evaluation of a mandatory radiology resident research rotation. *AcadRadiol* 7, 2000, 172-5.
- [13]. Morris BA, Kerbel D, Luu-Trong N: Family practice residents' attitudes toward their academic projects. *Fam Med* 26, 1994, 579-82.
- [14]. Fitz-Gerald MJ, Kablinger A, Manno B, et al: Psychiatry residents' participation in research: a survey of attitudes and experience. *Acad Psychiatry* 25, 2001, 42-7.
- [15]. Bickel J, Morgan TE: Research opportunities for medical students: an approach to the physician-investigator shortage. *J Med Educ* 55(7), 1980, 567-573.
- [16]. Fang D, Meyer RE: Effect of two Howard Hughes Medical Institute research training programs for medical students on the likelihood of pursuing research careers. *Acad Med* 78(12), 2003, 1271-1280.
- [17]. Frishman WH: Student research projects and theses: should they be a requirement for medical school graduation? *Heart Dis* 3, 2001, 3.
- [18]. Mark AL, Kelch RP: Clinician scientist training program: a proposal for training medical students in clinical research. *J Investig Med* 49(6), 2001, 486-490.
- [19]. Vujaklija A, Hren D, Sambunjak D, Vodopivec I, Ivanis A, Marusić A, et al. Can teaching research methodology influence students' attitude toward science? Cohort study and nonrandomized trial in a single medical school. *J Investig Med*. 58(2), 2010, 282-6.
- [20]. Sridevi KV. Attitude of M. Ed. Students towards Research. Available at <http://www.aiaer.net/ejournal/vol20108/14.htm>.
- [21]. Lavis JN, Oxman AD, Moynihan R, Paulsen EJ. Evidence-informed health policy 1-Synthesis of findings from a multi-method study of organizations that support the use of research evidence. *Implement Sci*. 3, 2008, 53.
- [22]. Lev EL, Kolassa J, Bakken LL. Faculty mentors' and students' perceptions of students' research self-efficacy. *Nurse Educ Today*. 30(2), 2010, 169-74.
- [23]. Khan H, Khan S, Iqbal A. Knowledge, attitudes and practices around health research: the perspective of physicians-in-training in Pakistan. *BMC Med Educ*. 9, 2009, 46.
- [24]. Khan H, Taqui AM, Khawaja MR, Fatmi Z. Problem-based versus conventional curricula: influence on knowledge and attitudes of medical students towards health research. *PLoS One*. 2(7), 2007, e632.
- [25]. Khan H, Khawaja R, Waheed A, Rauf M, Fatmi Z. Knowledge and attitudes about health research amongst a group of Pakistani medical students. *BMC Med Educ*. 6, 2006, 54.
- [26]. Sabzwari S, Kauser S, Khuwaja AK. Experiences, attitudes and barriers towards research amongst junior faculty of Pakistani medical universities. *BMC Med Educ*. 16, 2009, 9-68.
- [27]. Vodopivec I, Vujaklija A, Hrabak A, Lukia IK, Marusia A, Marusia A. Knowledge about and Attitude towards Science of First Year Medical Students. *Croat Med J*. 43, 2002, 58-62.
- [28]. Burgoyne LN, O'Flynn S, Boylan GB. Undergraduate medical research: the student perspective. *Med Educ Online*. 10, 2010, 15.
- [29]. Park SJ, McGhee CN, Sherwin T. Medical students' attitudes towards research and a career in research: an Auckland, New Zealand study. *N Z Med J*. 123(1323), 2010, 34-42.
- [30]. Rosemann T, Szecsenyi J. General practitioners' attitudes towards research in primary care: qualitative results of a cross sectional study. *BMC: Family Pract*. 5, 2004, 31.

- [31]. Wang, SC. &Guo, YJ. Counseling students' attitudes toward research methods class. Retrieved from http://counselingoutfitters.com/vistas/vistas11/Article_30.pdf (2011)
- [32]. Gill S, Levin A, Djurdjev O, Yoshida E. Obstacles to residents' conducting research and predictors of publication. Acad Med. 2001; 76:477. 18. Levine RB, Herbert RS, Wright SM. Resident research and scholarly activity in internal medicine residency training programs. J Gen Intern Med. 20, 2005, 155–9.

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