

# ANALYSIS OF INCENTIVES LEADING TO AN ENHANCED INTEREST OF PHYSICIANS IN RESEARCH WORK AND PRACTICAL ASPECTS

Faryal Suraya<sup>1</sup>, Hailah Othman<sup>2</sup>, Habibullah Chaudhary<sup>3</sup>, Sumaya AlAmri<sup>4</sup>, Tameem Ashrry<sup>5</sup>

<sup>1-5</sup> Department of Surgery, King Khalid University Hospital- Saudi Arabia.

**Address for Correspondence:**  
**Dr. Faryal Suraya**

Registrar, Plastic and Reconstructive Unit, Department of Surgery, King Khalid University Hospital- Saudi Arabia.

Email: abdurrehman2005@yahoo.com

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## ABSTRACT

**Objectives:** This study was conducted to determine the latest trends, assessment of main obstacle and incentives to conduct research among physicians.

**Methodology:** A questionnaire-based cross-sectional study was conducted over a period of six months. Four hundred and ninety nine physicians responded to the questionnaire, which included questions about demographic data of participants, their specialty, duration of research experience, achievements, views about barriers and motivational factors for research work.

**Results:** The study revealed more enthusiastic participation by younger physicians, age group 21 to 40 years, 382 (76.55%), although elder participants 117 (23.4%) were also active researchers. The highest response was received from surgery and gynecology departments 61 (12.27%), and most of physicians 398 (79.76%) were interested in conducting research in their relevant fields. Research related financial issues, unavailability of relevant facilities and lack of co-workers' cooperation were the main barriers but these issues did not bother more than half of the respondents and 85 (17.03%) physicians claimed that the main incentive for them was to enhance their knowledge.

**Conclusion:** Young physicians from all specialties are actively participating in research activities in the presence of promising research environment without the inconvenience of the traditional barriers and are mainly focused on enhancing their knowledge rather than financial or job promotion incentives.

**Key Words:** Research, Physicians, Incentives

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## INTRODUCTION

Research involves creative work of scientific data analysis which is conducted systematically to improve human knowledge regarding medical and various non-medical fields. Medical research can be categorized as clinical and basic research<sup>1</sup>.

The significance of research work for improvement and upgrading of any system is well established. In medical institutes it is an essential element for building a stable framework of medical students' training and patient management. Practical implication of research based information leads to explore and implement new treatment modalities for various diseases<sup>2</sup>. Research physicians play a key role in linking investigative work with clinical practice, they assist the progress of conducting clinical trials and facilitate the acceptability of evidence-based principles of patient care<sup>3</sup>. Research work conducted by joint efforts of academic staff and a

group of clinicians gives the best results for the whole community<sup>4</sup>. Moreover, physicians tend to take part in clinical trials provided that an appropriate setup and atmosphere is available and are compliant with modification of clinical practice according to latest study criteria<sup>5,6</sup>. Likewise, a drastic change has been noticed in the patient management approach too. Most of the physicians who were dependent upon their past experience are more reliant on research-based results now<sup>7,8</sup>. Randomized clinical trials present the best form of published medical research, which has convinced the physicians to adapt to new teaching and clinical practices<sup>9</sup>.

Physicians need to overcome multiple barriers in order to achieve their research project goals<sup>4</sup>. The significant obstacles for clinicians are shortage of time, lack of awareness regarding latest updates and deficient training for research work<sup>4</sup>. In addition to other obstacles to accomplish the research projects, the main issue is the inclusion of required sample population for these

studies. In order to overcome such problems, a number of clinicians and patients are desired to participate in research activities<sup>7</sup>. Main factors considered to encourage physicians' research work include; clinical practice related subject, direct communication or frequent interaction with the principal investigator, negligible effect of research work on routine clinical activities and patient care and partial reimbursement for the time spent in the study<sup>4</sup>.

By simple process of literature review, latest information and technical advances can be incorporated in disease management process<sup>9</sup> but research is important for clinicians because it links the clinical experience and literature based evidence to statistical analysis. Physicians' decision to participate in research depends upon their interest, demands and expectation about research. Clinical research has a number of goals such as developing new treatments modalities or medications, identifying causes of illness, studying trends or evaluating ways in which genetics may be related to an illness. A number of international studies available on physicians' interest in research but very scanty data is available from Saudi Arabia<sup>10</sup>. Clinicians conduct clinical studies to achieve different objectives; many are interested in getting higher job position or improving patient care, others want to enhance knowledge or desire to get financial benefits.

This study was conducted in order to investigate about physicians' interest in clinical trials, major barriers and main incentives to carry out research.

## METHODOLOGY

An observational, cross-sectional, questionnaire-based survey was conducted over a period of six months from September 2015 to February 2016. The study proposal was approved by institutional review board at King Khalid University Hospital. All participants were requested to sign a written informed consent to participate in the study. At above mentioned institute, a large number of departments are functioning including, basic sciences, clinical and subspecialty units with highly qualified faculty staff in all medical disciplines. Many of these units take care of academic, clinical and research projects at the same time. The hospital staff consists of permanently employed physicians in clinical departments, teaching faculty, post-graduate trainees and medical interns. Total number of physicians employed in the hospital was 813 during the study duration. The participants were permanent employees in various departments. While part time employees of the hospital, including those on the temporary job or postgraduate trainees working at transitory attachment were excluded from the study. Sample size was (575) 70.73 percent of total population under-consideration and selected by convenience sampling method. Physi-

cians were contacted directly during their duty hours in clinics, operation/procedure rooms and emergency department; the responses were collected manually from the respondents who consented for the study.

The questionnaire was specially prepared by subject experts in order to collect information about demographic data of physicians including their age, gender, and concerned specialty. In addition, the participants were enquired regarding their duration of involvement in research practice, number of publications, the level of satisfaction with financial support, institutional facilities, the approach of coworkers, suggested institutional obstacles in terms of economic issues and encouraging factors for promotion of research culture.

Data were entered into statistical package for social sciences (SPSS) version 21, (IBM, New York). Chi-square test was used to determine the difference of opinion among the participants, p value <0.05 was considered significant.

## RESULTS

A total number of 575 physicians were contacted to fill up the questionnaires; a response rate of 86.78% was observed as 499 physicians including 276 (55.31%) males and 223 (44.69%) females, completed the questionnaires. The highest number of respondents, 211 (42.28%), were from age group 31 to 40 years (Figure 1).

Most of the respondents were from surgical and obstetric departments, 61(12.22%) that included 42 (68.85%) males and 19(31.15%) females from surgery and 28(45.90%) males and 33 (54.10%) females from obstetrics and gynecology department. The second major group of respondents belonged to accident and emergency department, with a total number of 52(10.42%), including males 28(53.85%) and females 24(46.15%). Similarly, an enthusiastic response was observed by doctors from pediatrics, medicine and radiology departments with a considerable participation of 48(9.62%), 46(9.22%) and 36(7.21%) respectively. The majority of medical department physicians; 28(60.87%) were interested in research projects were included in the early adult group of 21-30 years. While many research interested surgeons; 28(45.90%), belonged to adult age group (31-40 years). Similar trends were seen among pediatricians, gynecologists, radiologists, intensivists, medical educationists and a miscellaneous group of doctors.

An interesting response was received for queries about research topic of interest. Most of the doctors 398(79.75%) including 208(41.68%) males and 190(38.08%) females preferred concerned specialty related topics to conduct research studies. While the second largest group of doctors 40(8.02%) was keen on conducting studies related to epidemic outbreaks

including swine flu and middle east respiratory syndrome. Many questionnaire-based studies were conducted to analyze the public awareness about these infectious diseases and methods of prevention. In both of these groups, majority of physicians had an age range between 31 to 40 years. In a similar manner, hospital administrative and social matters were the focus of attention for 28(5.61%) and 23(4.60%) physicians respectively; the hospital administrative related studies were

focused on comparison of various administrative systems prevalent at national and international levels, their benefits and drawbacks; while the latter involved in diverse social factors effecting the prevalence of specific disease in a certain gender or ethnic group (Table 1).

Two hundred and thirty-three(46.69%) physicians were pleased with research facilities available at the institution, 213(42.68%) were just satisfied and

**Table 1: Topics of physicians' interest in research and relevant factors**

Topic of Interest	Gender (n=499)		Age Groups (n=499)			
	Male	Female	21 to 30	31 to 40	41 to 50	51 and older
	276 (55.31%)	223 (44.69%)	171 (34.27%)	211 (42.28%)	73 (14.63%)	44 (8.82%)
Concerned Specialty	208 (41.68)	190 (38.08)	143 (28.66)	171 (34.27)	52 (10.42)	32 (6.41)
Epidemic Outbreaks	30 (6.01)	10 (2.00)	12 (2.4)	16 (3.20)	8 (1.6)	4 (0.80)
Hospital Administrative matters	17 (3.4)	11 (2.2)	8 (1.6)	11 (2.20)	6 (1.2)	3 (0.6)
Social Issues	14 (2.8)	9(1.8)	5 (1.0)	9 (1.8)	5 (1.0)	4 (0.8)
OTHERS (other specialties, economics etc.)	7 (1.4)	3 (0.6)	3 (0.6)	4 (0.80)	2(0.40)	1 (0.20)
Opinion about Research Facilities at KCUH						
Highly Satisfactory	129 (25.85)	104 (20.84)	90 (18.04)	94 (18.84)	26 (5.21)	23 (4.60)
Satisfactory	116 (23.25)	97 (19.44)	61 (12.22)	96 (19.24)	38 (7.62)	18 (3.61)
Insufficient	31 (6.21)	22 (4.4)	20 (4.01)	21 (4.21)	9 (1.8)	3(0.6)
Total	p =0.893		p =0.393			
Facing trouble with Financial Assistance						
Yes	107 (21.44)	82 (16.43)	72 (14.43)	80 (16.03)	24 (4.81)	13 (2.6)
No	95 (19.03)	76 (15.23)	66 (13.23)	72 (14.43)	21 (4.21)	12 (2.4)
Total	p=0.998		p=0.585			
Duration of Research Experience						
<2 years	71 (14.23)	57 (11.42)	56 (11.22)	51 (10.22)	20 (4.00)	1 (0.20)
2 to 5 years	104 (20.84)	90 (18.04)	70 (14.02)	102 (20.44)	12 (2.40)	10 (2.00)
>5 years	101 (20.24)	76 (15.23)	45 (9.01)	58 (11.62)	41 (8.21)	33 (6.61)
Total	p =0.799		p <0.001			
Number of Papers Published						
None	41 (8.21)	29 (5.81)	32 (6.412)	29 (5.81)	6 (1.20)	3 (0.60)
1	59 (11.82)	53 (10.62)	47 (9.41)	46 (9.21)	12 (2.40)	7 (1.40)
2 to 4	78 (15.63)	53 (10.62)	47 (9.41)	63 (12.62)	11 (2.20)	10 (2.00)
5 to 10	57 (11.42)	47 (9.42)	28 (5.61)	42 (8.41)	20 (4.01)	14 (2.80)
more than 10	41 (8.22)	41 (8.22)	17 (3.40)	31 (6.21)	24 (4.81)	10 (2.00)
Total	p =0.627		p <0.001			

**Table 2: Main Research Incentives**

Question	Gender		Age Groups			
	Male (276)	Female (223)	21 to 30 (171)	31 to 40 (211)	41 to 50 (73)	51 and older (44)
Chance of Promotion at Workplace	36 (7.21%)	19 (3.81%)	17 (3.41%)	20 (4.00%)	13 (2.60%)	5 (1.00%)
Enhancing Personal Knowledge	43 (8.62%)	42 (8.42%)	28 (5.61%)	37 (7.41%)	10 (2.00%)	10 (2.00%)
Popularity	14 (2.81%)	16 (3.21%)	8 (1.6%)	13 (2.60%)	3 (0.60%)	6 (1.20%)
To Improve Healthcare Services by Introducing New Ideas	37 (7.41%)	22 (4.41%)	16 (3.21%)	29 (5.81%)	6 (1.20%)	8 (1.60%)
For Progress of Medical Education Process	21 (4.21%)	18 (3.61%)	17 (3.41%)	12 (2.40%)	5 (1.00%)	5 (1.00%)
To get Cash Prize for Best Article	27 (5.41%)	20 (4.01%)	17 (3.41%)	21 (4.20%)	9 (1.80%)	0
In Competition with Colleagues	23 (4.61%)	27 (5.41%)	14 (2.81%)	27 (5.41%)	9 (1.80%)	0
Just to Remain Busy	21 (4.21%)	14 (2.81%)	14 (2.81%)	14 (2.81%)	7 (1.40%)	0
To have New Experience	9 (1.80%)	11 (2.20%)	5.0 (1.00%)	2.0 (0.40%)	6 (1.20%)	7 (1.40%)
Chose 2 options (for Promotion and Knowledge Improvement)	45 (9.02%)	34 (6.81%)	35 (7.01%)	36 (7.21%)	5 (1.00%)	3 (0.60%)
p value	0.503		0.002			

53(10.62%) were unsatisfied. One hundred and eighty-nine (37.88%) respondents had bad experience regarding financial issues while 310 (62.12%) doctors did not face any difficulty in obtaining funds. Three hundred and twenty-eight (65.73%) physicians were satisfied with the attitude of their colleagues and peers working at relevant departments, contrary to 171(34.27%) respondents who were not satisfied. Majority of them, 194(38.88%) had research experience of 2 to 5 years, 177(35.47%) had been associated with research activities for more than 5 years and 128 (25.65%) had developed an interest in research recently. Most of the participants, 131 (26.25%) were authors of 2 to 4 publications while 112 (22.44%) had one article published and 70 (14.03%) respondents had no publication (Table 1).

The main incentives for research work were analyzed in respect of physicians' gender and age group (Table

2). A major proportion of doctors 85(17.03%), including 43(8.62%) males and 42(8.42%) females, highlighted that they wanted to conduct research work to enhance their knowledge. A great proportion of these doctors, 28 (5.61%), had age range between 21 to 30 years, 37 (7.41%) of them were between 31-40 years. The second major research incentive for 59 (11.82%) physicians was the introduction of innovative ideas for healthcare improvement. This group comprised of 37(7.41%) males and 22 (4.41%) females, 29 (5.81%) of participants belonged to age group of 31 to 40 years, remained on the top. While 55(11.02%) respondents with 36(7.21%) males and 19(3.81%) females were keenly indulged in clinical studies for the sake of promotion in their job positions. The most active age group in this category was between 31 to 40 years with 20(4.01%) respondents (Table 2).

## DISCUSSION

Well-conducted research is a key factor for the success of global health endeavors. A physician-researcher bridges the gap between published medical literature and patient management. In order to enhance physicians' interest in clinical studies research related institutional traditions must be evolved to facilitate carrying out clinical studies and encourage the collaboration of evidence-based medicine in clinical practice, which revolves around the pivotal point of clinical trials and data analysis<sup>9</sup>.

The present study reveals a higher interest for conducting research work among early adult and adult group of physicians especially in the field of their practice. They were found to be involved in research work related to emergent issues like epidemic outbreaks, administrative and social affairs. Most of these physician researchers were satisfied with available research facilities, financial assistance and peer collaboration. Comparatively, most of them wanted to enhance their personal knowledge and to improve healthcare facilities for their patients while very few of them had desire to get financial reward.

In comparison to present study, a survey conducted at tertiary care teaching hospital Riyadh, Saudi Arabia<sup>11</sup> revealed that physicians and paramedical staff working at intensive care unit were extremely interested in research work for its beneficial effect on their career but the time limitation, deficiency of funds and absence of other encouraging incentives were the main obstacles. Another cross sectional, email administered questionnaire based survey conducted in 2014, among resident physicians at same institute of Riyadh as of present study,<sup>12</sup> revealed that majority of respondents accepted the importance of research, its essential role for health care services improvement and most of them agreed for beneficial effect of research that it helps in improvement of academic career. While, lack of research coaching, time limitations, job tensions and inadequate training were considered significant hurdles for research. Senior residents were more involved in research activities than their junior colleagues.

Similarly, a couple of studies conducted in Pakistan indicated that overall research awareness and attitude has improved among medical students with progressive study years<sup>13</sup> which goes in favor of more research interest in early adult and adult groups of present study. But in contrast to our survey, time shortage, substandard research facilities, poor research infrastructure and insufficient financial support were the significant obstacles encountered by post graduate trainee researchers in Pakistan<sup>14</sup>.

Nobre showed that the proportion of available ev-

idence-based guidelines has been increasing compared with systematic reviews on other types of practice guidelines, since 1998. This fact is indicative of rising physicians' interest to explore the advanced patient management options in the context of recent research<sup>15</sup>. Likewise, it was pointed out in an Australian study that general practitioners had weak research culture during the last century, but once the research barriers were removed, a relatively high proportion of general practitioners became interested in research activities reaching up to one-third of their total number<sup>16</sup>. Kay Jones from Melbourne showed contradictory trends. Although research is important to improve clinical practice, service delivery, the assessment and care of patients, but recruitment and retention of general practitioners in research had been disappointing. Research challenges, reduced interest in research participation and feminization of the workforce had major implications for the future of research in general practice. Systematic changes were needed to address these issues<sup>17</sup>.

At a USA center, Zinner et al<sup>18</sup> explored the increasing trend of physicians in a variety of projects such as basic, translational, clinical trials, health services research, clinical epidemiology, and others. A substantial proportion of faculty members were known to be conducting research and publishing without sponsorship. These observations are consistent with present study findings, which depict the high level of participants' interest in research work, without much interest in financial reward.

It has been seen that physicians are motivated to conduct scientific investigative studies if there is full institutional support for these projects. Moreover, inter-departmental cooperation in an organization promotes clinicians indulgence in effectual research projects to derive beneficial conclusions from a practical point of view. The fundamental issues for conducting research studies were described by Gawlinski<sup>19</sup> in 2008, which included inadequate time, lack of research training, practical flaws in study design, financial issues and institutional priorities for patient related affairs over research work. In the present study, more than half of the participants were satisfied by the cooperative behavior of their contemporaries from their own as well as associated departments. Similarly, almost two-third of the physicians were satisfied by the supportive institutional facilities and financial support.

Researcher have found that the physicians who are enrolled in the research training courses at an early age were particularly successful in establishing careers as clinician-investigators. These courses help to guide physicians regarding their queries about research work<sup>20</sup>.

The postgraduate medical training programs at Korea, South Africa, Nigeria, Philippines, Nepal, Sri Lanka,

Pakistan and many other places involves successful accomplishment of few research projects before the candidate is declared eligible to take the postgraduate exam in various specialties. Similarly, at tertiary care hospitals, continuous physicians' involvement in a clinical trial is either considered compulsory for employment stabilization nor research achievements are appreciated by attractive rewards<sup>21</sup>.

A considerable number of our study participants; 39(7.82%) expressed the reason of their interest to obtain educational achievements. Some factors have been identified by analytical scientists for the promotion of research culture which include the availability of human and financial resources and the establishment of organizational infrastructure to facilitate these activities. Likewise, research-oriented training and teaching of undergraduate medical students and clinicians through symposia and seminars are additional supportive measures for research infrastructure<sup>3</sup>. Research related financial funding at health and educational institutes<sup>22</sup> proves to be the most important motivating factor to physicians' involvement in research. This observation is in contradiction to present study in which only 47(9.42%) of physicians declared a financial interest to carry out research work.

Many advantages of research work for clinicians, patient, hospitals and associated organizations and the community as a whole have been described in the literature<sup>3</sup>, by conducting clinical trials physicians can explore the best available treatment options for patients with various diseases<sup>23</sup>. Research activities not only improve their knowledge and skill but also facilitate better employability<sup>24</sup>.

Moreover, they owe respect and admiration due to innovations in clinical practices. Similar to present study observations were reported by Vicky et al<sup>25</sup> factors such as the aspiration to improve professionally, scholarly contentment and highly paid jobs were considered to be the main driving factors for research involvement among pharmacy students. In short, recently, the research activities have become associated with enormous economic, social and academic benefits.

## CONCLUSION

The current study presents an overview about the level of physicians' interest in research work, encouraging factors and major problems faced by them. Our results indicate a rising trend of physicians' interest toward research activities and clinical trials. The presence of negligible barriers, high level of satisfaction regarding available facilities and the ambition to update their knowledge have been found to be the leading factors for clinical studies while financial and employment benefits received secondary attention.

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### CONTRIBUTORS

FS conceived the idea, designed the study, and prepared the manuscript. HO and SA Helped in data collection, analysis and search for references. CH reviewed the data and critically revised the manuscript. TA gave intellectual input and did proof reading of the manuscript. All authors contributed significantly to the submitted manuscript.