ORIGINAL ARTICLE

Why don't we do enough medical research?

Akavipat Phuping, Metta Puangpaga, Chailorratn Anchuen

Abstract

Objective: To locate the 5 main factors related to the scarcity of medical research.

Methods: The study was conducted at the Prasat Neurological Institute, Bangkok, Thailand, from December 1 to 15, 2006, and comprised medical staff of the institution. A questionnaire was developed that explored demographic data, evaluation of the 5 domains related to research - knowledge, attitude, motivation, resources, and skills - and the requirement for research conducted. Descriptive statistics and analysis of variance (ANOVA) were used to analyse the data. $P < 0.05$ was considered statistically significant.

Results: Of the 285 questionnaires sent out, 189 (66.32%) were returned. The frequency of each professional career type who had correct answers was statistically significant among physicians and nurses. The mean total percentages of knowledge accuracy in physicians, nurses and professionals allied to medicine were 73.47±17.36%, 30.5±25.70% and 54.95±27.9% respectively which had statistically significant differences in the level of research education. The mean total attitude, motivation, resource and skill scores were 3.65±0.57, 3.59±0.05, 2.98±0.02 and 2.78±0.10 which had no statistical differences within the professions and working duration. However, attitudes and skills were significantly different amongst different levels of research education.

Conclusion: The factors related to research constraint are multi-dimensional. Skill, resource and knowledge are the core factors. The administrative committee needs to consider multiple strategies based on demographic characteristics to facilitate and advocate research work.

Keywords: Factors, Requirement, Research conductibility. (JPMA 63: 423; 2013)

Introduction

The Prasat Neurological Institute (PNI) was established in 1958 to serve every modality of neuroscience patients. Today this institute has been recognised as a tertiary healthcare centre under the supervision of the Department of Medical Services, Ministry of Public Health. As a consequence of the government-led modernisation, there has been additional focus on academics. Clinical and administrative governance has encouraged evidence-based practice. It has been embraced to improve healthcare in many different ways.[1] The influence of evidence-based medicine challenges the attentiveness about research work, including an expectation that staff will pursue education and professional development opportunities.[2] Plenty of resources have been provided to encourage research needed in order to increase research involvement.[3]

From the Department of Information Technology and academic support database, 37.8% of total PNI personnel still conduct a small amount of research work even when it was assigned as a duty. There have been only 63 qualified researches published since 2000.

Several studies have revealed that the reasons for the neglected research are lack of time,[4,5] difficulties in obtaining research funds, limited knowledge, lack of confidence about research skills,[6] and lack of research culture.[7] All of the evidence was based on data obtained from small group discussion or in-depth interview, but nothing showed those factors or any requirements from a large sample size especially in any Asian country. Therefore, the current study was performed to locate the factors related to the scarcity of research, and to determine the overall requirement to overcome this limitation among the medical personnel at PNI.

Subjects and Methods

The study was conducted at the Prasat Neurological Institute, Bangkok, from December 1 to 15, 2006.

Following the approval by the ethics committee, the questionnaire was developed based on demographic characteristics. One best-choice answer for knowledge evaluation, and 5-point Likert's scale (1: 'definitely not agree;' to 5: 'definitely agree') for attitude, motivation, resource and skill evaluation. An open-ended question was added to demonstrate the individual's opinion.[8]

Department of Anaesthesiology, Prasat Neurological Institute, 312 Rajvithee Road, Bangkok, Thailand.

Correspondence: Akavipat Phuping. Email: ppakvp@hotmail.com

The content validity of the questionnaire was approved by two groups of peer reviewers, i.e. clinical epidemiologists and health social science epidemiologists. It was subsequently tested by statistical methods with the test of reliability. Cronbach's alpha values were in the 0.7-0.9 range. The construct validity was analysed with factor analysis. The factor loading was 0.67, while Kaiser-Meyer-Olkin value was 0.74.

The factors were surveyed among the target population in Prasat Neurological Institute by the questionnaire. All medical personnel who worked in the institute were recruited. Classification was done according to their job description, not working position. The name list was derived from the Human Resource division and their present working position was confirmed directly by each department. The inclusion criteria were personnel in 3 professional career categories, i.e. physicians, nurses, and professions allied to medicine. Finally, 285 medical staff (36 physicians, 200 nurses and 49 professions allied to medicine) were enrolled in the survey.

The questionnaires were coded and distributed to each department on December 1, 2006. One week later they were collected. The notification of unanswered questionnaires was done generally in writing within 3 days. The second round of questionnaire collection was done on December 12, 2006. Two public announcements were made on December 13 and 14, 2006, to increase the participation. The collection process ended on December 15, 2006. Completed questionnaires were entered into SPSS 11.5. Descriptive statistics were used. The mean total percentages of various factors were compared using analysis of variance (ANOVA) and followed with Bonferroni method for multiple comparisons as if the normality test was proved by one sample Kolmogorov-Smirnov test. P-value ≤ 0.05 was considered statistically significant.

Results

Of the 285 questionnaires sent out, 189 (66.32%) were returned. Of them, 172 (91.0%) were females and 17 (9%) males with an overall mean age of 38.21±10.01 years. The minimum and maximum working duration were 1-37 years, while the mean was 14.58±10.54 years (Table-1).

The maximum number of research conducted by an individual was 14 (7.40%) but generally 148 (78.5%) said they had never done any research before. From 142 research works, 75 (52.82%) were multi-centre trials conducted by 35 personnel; 25 (17.61%) from 7

Table-1: Demographic characteristics.

Variable	Frequency (n)	Percentage
Department		
Neuro-medicine	55	29.1
Neurosurgery	41	21.7
Out patient	26	13.8
Rehabilitation	14	7.4
Psychology	10	5.3
Neuro-ophthalmology	8	4.2
Neuro-paediatric	7	3.7
Nursing academy	7	3.7
Pharmacology	7	3.7
Others	14	7.4
Professional career type		
Physician	9	4.8
Nurse	151	79.9
Professions allied to medicine	29	15.3
Graduation		
Bachelor degree	161	85.2
Master degree	22	11.6
Doctoral degree	6	3.2
Level of completing a research educational class		
A full course during Bachelor degree study	64	33.9
A full course during Master degree study	17	9
A full course during Doctoral degree study	3	1.6
Research tutorial	67	35.4
Never	38	20.1

Table-2: Frequency of each professional career type having conducted research.

Profession	0 n (%)	1 n (%)	≥2 n (%)
Physicians (n=9)			
Individual trials	3 (33.3)	2 (22.2)	4 (44.5)
Multicentre trials	7 (77.8)	1 (11.1)	1 (11.1)
Research published in TJI* list	6 (66.7)	1 (11.1)	2 (22.2)
Research published in Medline® journal list	9 (100)	0 (0)	0 (0)
Research presented in conferences	7 (77.8)	1 (11.1)	1 (11.1)
Nurses (n=143)			
Individual trials	117 (81.8)	19 (13.3)	7 (4.9)
Multicentre trials	118 (82.5)	15 (10.5)	10 (7.0)
Research published in TJI* list	138 (96.5)	2 (1.4)	3 (2.1)
Research published in Medline® journal list	139 (97.2)	2 (1.4)	2 (1.4)
Research presented in conferences	135 (94.4)	4 (2.8)	4 (2.8)
Professions allied to medicine (n=29)			
Individual trials	22 (75.9)	3 (10.3)	4 (13.8)
Multicentre trials	21 (72.4)	4 (13.8)	4 (13.8)
Research published in TJI* list	22 (75.9)	3 (10.3)	4 (13.8)
Research published in Medline® journal list	26 (89.7)	1 (3.4)	2 (6.9)
Research presented in conferences	21 (72.4)	6 (20.7)	2 (6.9)

*TJI=Thai journal index.

Table-3: Frequency of each professional career type related to research knowledge.

Profession	n (%)	P-value
Physician*		
Statistics knowledge	6 (75.0)	0.014†
Research design	7 (87.5)	0.297
Basic methodology	4 (57.1)	1
Literature searching	7 (87.5)	0.188
Appraisal	8 (100.0)	0.002†
Ethical issue	4 (50.0)	1
Advanced methodology	5 (62.5)	0.321
Nurses		
Statistics knowledge	41 (31.1)	
Research design	78 (56.9)	
Basic methodology	16 (12.1)	
Literature searching	68 (50.4)	
Appraisal	47 (35.3)	
Ethical issue	18 (13.0)	
Advanced methodology	28 (20.7)	
Professions allied to medicine*		
Statistics knowledge	16 (59.3)	0.002†
Research design	14 (51.9)	0.864
Basic methodology	9 (34.6)	0.009†
Literature searching	22 (81.5)	0.152
Appraisal	20 (74.1)	<0.001‡
Ethical issue	12 (44.4)	0.709
Advanced methodology	13 (48.1)	0.798

*P-value <0.05 (Analysis of variance)
†P-value <0.05 (Bonferroni multiple comparisons)
‡P-value <0.001 (Bonferroni multiple comparisons)

personnel were published in journals indexed in Medline®; and 25 (17.61%) from 18 personnel were presented at a national or international congress (Table-2).

Knowledge was categorised into basics (literature search, research design, research methodology and statistics) and advanced (critical appraisal and methodology). In general, literature search (n=26; 13.75%) and research design (n=33; 17.46%) were the most precise answers, while advanced methodology was the least correct answer (n=16; 8.45%). Correct answers in the nurses group was less than 50% in both basic and advanced knowledge except in research design and literature searching. The frequency of each professional career type that had correct answers was statistically significant among physicians and nurses with p <0.05 as well as the professions allied to medicine and nurses with p <0.05 (Table-3). The mean total percentages of knowledge accuracy in physicians, nurses and professions allied to medicine were 73.47±17.36%, 30.5±25.70% and 54.95±27.9% respectively while this accuracy had no statistical significance among the working duration.

The scarcity of research conduct factor score in attitude, motivation, resource and skill among the professional career type and working duration had no statistical significance. Means of the total attitude, motivation, resource and skill score were 3.65±0.57 and 3.59±0.05, 2.98±0.02 and 2.78±0.10.

Another interesting demographic characteristic was the level of research education (Table-4).

The opinion of the medical personnel in order to facilitate research conduct was graded into 3 categories, i.e.; 'self-directed doing'; 'doing in a research workshop session' and 'doing followed by any research protocol which was developed by others.' The scores were 3.54±0.99 for 'self directed doing', 3.89±0.76 for 'doing a research workshop session', and 3.68±0.90 for 'doing followed by any research protocol which was developed by others'. The score demanding research workshop was the highest in nursing (3.88±0.06) and professions allied to medicine (3.97±0.16), while the 'self-directed doing' was the highest in physicians (3.88±0.35).

Eleven (5.82%) of the responses to the open-ended questions recommended the institute to establish a

Table-4: The level of research education.

Level of research education	Percent of knowledge corrected answer*	Attitude score†	Motivation score	Resource score	Skill score*
Full course during Bachelor degree study	34.29±26.17‡	3.61±0.41‡	3.53±0.43	2.95±0.73	2.71±0.58‡
Full course during Master degree study	71.43±15.43	4.04±0.42	3.86±0.42	3.05±0.69	3.39±0.42
Full course during Doctoral degree study	71.43±0.0	3.75±0.35	3.67±0.11	3.3±0.55	2.65±0.21
Research class	44.02±25.73‡	3.62±0.38‡	3.6±0.38	3.01±0.56	2.92±0.59
Never	12.9±19.64‡	3.52±0.48‡	3.47±0.52‡	2.98±0.42	2.37±0.74‡
Total	36.76±28.59	3.64±0.43	3.58±0.44	2.99±0.61	2.78±0.66

*P-value <0.001 (analysis of variance)
†P-value <0.05 (analysis of variance)
‡P-value <0.05 (Bonferroni multiple comparisons)

research team consisting of mentors, experienced researchers and also statisticians to advocate, assist or even conduct qualified researches; 7 (3.70%) of the responses required specific research education on a variety of themes, instructors and levels of the apprentice; 4 (2.11%) of the responses needed 'study leave' with rigid schedule separating research time from routine; 4 (2.11%) desired more incentive income and merit pay for published or presented research; 3 (1.58%) suggested reorganising the structure of research administration to manage properly and conveniently; 2 (1.05%) recommended the important role of multidisciplinary approach with the purpose of clinical outcome achievement.

Discussion

We did not calculate the sample size and did not use any sampling methodology, and had a response rate of 66.32%, which was quite low because of the retrieval process. The lack of response was the highest (75%) in the physician group. The interpretation of data, as such, needs to be seen in that light.

The factors related to the constraint of research conductibility were marked as skill, resource, and knowledge, which was in line with literature.[4,6] Others found 16.3% of the participants in the Riyadh region of Saudi Arabia indicating lack of library in the locality; 14.4% limited resource and facilities; and 11.4% lack of scientific media.[1] There were two opinions in the sub-section of organising research team from open-ended question referring to 'lack of peer support' as mentioned by an earlier study.[6] Lack of supervision and confidence to use or conduct the research, fear of medical dominance of ethics and grants committee as well as the problems in writing the manuscript, the use of professional jargon were the other barriers which have been previously stated.[9]

Research has established that time is the most important factor.[1,5] Some have related it to patient or work overload.[10] A study in China found that manpower had a convincing effect other than time.[11] None stated attitude and motivation as the affecting factors except one,[7] which asserted 'research culture' - support, personal skill, ability to learn or aptitude and personal intention. The current study found attitude and motivation scores to be over 3.50 which are adequate for medical personnel at PNI.

The research knowledge level among the nurses was statistically different from the others which can be the main reason in research conductibility. A study observed that "most nurses do not view themselves as scientists committed to the long and arduous pursuit of knowledge but as action-orientated doers."[12] Nowadays the nursing profession is becoming increasingly driven by the need to validate practice among academic activity. The nurses cannot rely on the information they were taught to be an adequate source of clinical knowledge throughout their practice. The research knowledge which comprises high scientific, ethical, transparent decision-making processes, robust monitoring arrangement, should be fully integrated.[9]

Knowledge score from each subject matter may lead to research training strategy. Meticulous research methodology and statistics knowledge should be taught earlier to all staff, especially the nurses who had >25% correct answers. The subject needed to be taught to professions allied to medicine group should be research design knowledge. The combination of personal education plan and learning by practice activity to encourage skills should be integrated as an alternative.[13,14] Moreover, the requirement of the personnel who need research workshops as a research training programme should be immediately responded to.

Working year was found to have no relationship with the scarcity of research conductibility. The initiation of research course would support and be beneficial to the individual not only in terms of knowledge and skills, but also with regard to enthusiasm and strategic direction which will enhance their overall experience.

Resource provided for research is somehow confined to certain areas, like funding management; equipment; material; time; administration process; and manpower. There are several points of view to consider depending on whether they are contributors or applicants. The problem is how to consume; how to make it the most valuable; and how to increase the satisfaction level with limited resources. Research utilisation skill should be a concern. Studies have suggested journal club participation as one of the key strategies that facilitate research utilisation. A dialogue between administration and staff about how to remove the barriers is critical.[15]

With regard to the personnel requirement, research team is a thought-provoking issue. The implementation of the standard research team may inspire educational and research opportunities.

Conclusion

Research barriers are not specific to any particular culture or system of healthcare. Factors related to

research constraint are multidimensional, with skill, resource and knowledge being the core ones. The administrative committee needs to consider multiple strategies to facilitate and advocate research. Organisational support and a process that is receptive to change accompanied by the individual acceptability are essential.

Reference

1. Al-Ansary LA, Khoja TA. The place of evidence-based medicine among primary health care physicians in Riyadh region, Saudi Arabia. Fam Pract 2002; 19: 537-42.
2. Cleary M, Freeman A. Facilitating research within clinical settings: the development of a beginner's guide. Int J Ment Health Nurs 2005; 14: 202-8.
3. Annual budget plan. Bangkok: The director-general of the department of medical service, The Planning Devision, Ministry of Public Health; 2005 October.
4. Deans C, Lea D, Geyer R. Nursing research 'down under'. J Psychosoc Nurs Ment Health Serv 1997; 35: 25-31.
5. Goodyear-Smith F, Whitehorn M, McCormick R. General practitioners' perceptions of continuing medical education's role in changing behaviour. Educ Health (Abingdon) 2003; 16: 328-38.
6. Roxburgh M. An exploration of factors which constrain nurses from research participation. J Clin Nurs 2006; 15: 535-45.
7. Watson B, Clarke C, Swallow V, Forster S. Exploratory factor analysis of the Research and Development Culture Index among qualified nurses. J Clin Nurs 2005; 14: 1042-7.
8. Akavipat P, Yimrattanaboworn P, Chukasemrat M. Tool Development for Exploring the Factors Affected Research Conductibility. In: Prasat Neurological Institute; 2007.
9. Parkin C, Bullock I. Evidence-based health care: development and audit of a clinical standard for research and its impact on an NHS trust. J Clin Nurs 2005; 14: 418-25.
10. MacLean S, Desy P, Juarez A, Perhats C, Gacki-Smith J. Research education needs of pediatric emergency nurses. J Emerg Nurs 2006; 32: 17-22.
11. Tsai SL. Nurses' participation and utilization of research in the Republic of China. Int J Nurs Stud 2000; 37: 435-44.
12. Fawcett J. Integrating research into the faculty workload. Nursing Outlook 1979; 27: 259-62.
13. Evans A, Ali S, Singleton C, Nolan P, Bahrami J. The effectiveness of personal education plans in continuing professional development: an evaluation. Med Teach 2002; 24: 79-84.
14. Ward J, Wood C. Education and training of healthcare staff: the barriers to its success. Eur J Cancer Care (Engl) 2000; 9: 80-5.
15. Fink R, Thompson CJ, Bonnes D. Overcoming barriers and promoting the use of research in practice. J Nurs Adm 2005; 35: 121-9.