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A Needs Assessment in Research Methodology of Naval Medical Department Personnel

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Abstract

The purpose of this descriptive research was to study the needs for Naval Medical Department personnel to understand research methodology. The 324 samples consisted of physicians, dentists, pharmacologists, medical technicians, physiologists, psychologists, radiologists, nutritionists, social workers, professional nurses and technical nurses who were recruited by stratified random sampling. The research instrument was a questionnaire consisted of 2 parts: a 5-rating scale and dual response items. The instrument was tested for content validity using 5 experts, and the reliability of the instrument was equal to 0.99. To analyze the data, the descriptive statistics and PNI_{Modified} were used for needs assessment. The findings were: 1. The need for information about research methodology, using both detailed and overall scores, included the statistics used and data analysis, research project management, and publication. 2. The need for information about the research introduction aspect included the operational definition of variables writing and variables identification. 3. The need for information about the research design aspect included the qualitative research, the future research and the research and development. 4. The need for information about the statistics used and the data analysis aspect included the nonparametric statistics and discriminant analysis. 5. The need for information about the data analysis presentation, conclusions and findings discussion aspect included the data analysis presentation and the conclusions and findings discussion. 6. The need for information about the research publication aspect included the research article writing and the presentation in academic conference. 7. The need for information about the research project management aspect included research project writing for receiving the grants and the research funding agencies.

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1. Background and Rationale

The missions of Naval Medical Department are to direct, coordinate, suggest, supervise, and conduct health services, medical logistics, research, and medical development together with other missions as designated. Conducting researches is one of the important missions the Naval Medical Department focuses on to encourage its personnel to help construct a larger body of knowledge related to health services provided by the department. According to the information stated in the 18th annual academic conference of Naval Medical Department, it was however found that on average there were only 15 researches published yearly, and most of them were conducted by physicians. There were not as many as expected from other medical staff such as dentists, medical technicians, and nurses. Moreover, the application of the conducted researches is still unclear.

Research and Research Support Committee, Naval Medical Department is responsible for promoting, supporting and providing advices in relation to research conduct to units under the medical department, and is therefore interested in conducting research on need analysis of personnel's understanding of research methodology. This is because, comparing to other types of study, needs assessment is a method to gather more valid and concrete information to be presented to the supervisors. It will reflect the actual conditions, causes, solutions, and preventions of a problem (Wongwanich, 2005). This research hence would provide information related to the need of the Naval Medical Department personnel to understand the research methodology which eventually would lead to benefits gained for conducting Research Competency Development Project or for providing the accurate research advices that respond to the needs of the personnel. Responding to the needs would stimulate the personnel's confidence to conduct more valuable researches as required by the Naval Medical Department.

2. Research Objectives

To study the needs in understanding of the research methodology of Naval Medical Department personnel.

3. Research Methodology

This research was a descriptive research.

Research Population were 3,122 medical personnel of the Naval Medical Department. The sample size was calculated based on Yamane's formula (Yamane, 1976) and the calculation came up with 399 samples. The samples were composed of physicians, dentists, pharmacologists, medical technicians, physiologists, radiologists, social workers, psychologists, nutritionists, professional nurses and technical nurses who were recruited by stratified random sampling.

Research Instrument was a questionnaire consisted of 2 parts. The first part was about personal data and the second part was a dual response data on needs to understand research methodology. The second part which was a 48-item 5-rating scale questionnaire focused on collecting 2 types of information: current knowledge on research methodology and expectation to gain knowledge in research methodology.

Validation of Research Instrument

The validation of research instrument was investigated by 5 experts in terms of objectivity of each item and content validity. The reliability of the instrument was determined by using Cronbach's alpha coefficient and it was equal to .99.

Data Collection

Data collection was conducted after obtaining permission from the units of Naval Medical Department that the medical personnel were attached to. The questionnaires were then distributed and returned via navy post. There were 324 complete questionnaire returned which made up of 81.20 percent.

Data Analysis

1. Analyze personal data related current knowledge on research methodology by using descriptive statistic.
2. Analyze and prioritize the needs to develop the competency of the Naval Medical Department personnel

by using Modified Priority Needs Index (PNI_{modified})

$$PNI_{\text{modified}} = (I - D) / D$$

4. Results

4.1 Results of the personal information data analysis

It was found that most samples were female which accounted for 52.50 percent of the whole samples. The age of most samples ranged from 31 – 40 which was 42.20 percent. Most of them were commissioned officers ranging from Ensign to Lieutenant which represented 36.10 percent. The career and expertise of the samples were mostly associate nurses which constituted 48.80 percent. Most samples had Bachelor's Degree or equivalent which accounted for 59.30 percent. Most of them had experiences working at the units under the Naval Medical Department less than 10 years which was 43.90 percent while 14.80 percent had experiences as co-researchers.

4.2 Results of the analysis on needs in understanding research methodology

It was found that the personnel of the Naval Medical Department were mostly in need of knowledge in terms of statistics and data analysis. The second ranking was knowledge on research project management and publicizing of researches as shown in Table 1 with crucial aspects as following.

4.2.1. Fundamental knowledge on research

There was a need to acquire information about firstly how to write the operational definition of variables and secondly how to identify variables.

4.2.2. Research design

The needs were primarily on qualitative research. The future research and the research and development were ranked the second.

4.2.3. Statistics and data analysis

The needs were mostly on knowledge acquisition on application of nonparametric statistics while discriminant analysis and cluster analysis were at the second rank.

4.2.4. Findings presentations, conclusions and discussion.

The needs were primarily on knowledge about data analysis presentation; conclusion and discussion on findings were at the second rank.

4.2.5. Research publication

There was a need to understand mostly on how to write research articles and secondly how to present the researches in academic conferences.

4.2.6. Research project management

The needs were focusing on how to write a research project for requesting grants and the next priority was finding the research funding agencies.

Table 1 Means of current knowledge, expectations and needs in each aspect and in general

Aspect	Current Knowledge		Expectations		PNI _{Modified}	Rank
	Mean	S.D.	Mean	S.D.		
1. Fundamental knowledge on research	2.30	.70	3.56	.73	.57	6
2. Research design	2.08	.76	3.57	.77	.72	4
3. Statistics and data analysis	1.91	.56	3.53	.81	.85	1
4. Finding presentations, conclusions and discussion	2.19	.78	3.54	.81	.62	5
5. Research publication	2.02	.75	3.54	.82	.75	3
6. Research project management	1.93	.73	3.52	.83	.84	2
Total	2.10	.63	3.55	.74		

4.3 Results of the analysis on needs in understanding research methodology in each career

It was found that physicians and professional nurses mostly needed the knowledge on statistics and data analysis with the knowledge on research project management as the second priority. Technical nurses needed to know mostly about research publication while knowledge on statistics and data analysis ranked the second as shown in table 2.

Table 2 Needs of each career in understanding research methodology in each aspect and in general

Aspect	Physicians		Professional Nurses		Technical Nurses	
	Needs	Rank	Needs	Rank	Needs	Rank
1 Fundamental knowledge on research	.42	5	.47	6	.67	6
2 Research design	.59	3	.68	4	.78	4
3 Statistics and data analysis	.82	1	.82	1	.88	2
4 Finding presentations, conclusions and discussion	.34	6	.58	5	.74	5
5 Research publication	.50	4	.70	3	.89	1
6 Research project management	.77	2	.76	2	.87	3

5. Finding Discussion

The results of the needs assessment in understanding research methodology revealed important points to be discussed as following.

Needs to understand research methodology The results showed that the samples needed to understand the use of statistics and data analysis the most. This might be resulted from the significant position of statistics in quantitative research conduct. The process is consisted of 3 stages. The first stage Prior to apply statistics to analyze data, the researchers are required to test the data by investigating variables' distribution pattern, relationship between variables, missing variables, extreme values, and basic assumption of analysis statistics. The second stage To choose an appropriate statistics, the researchers needs to consider 2 crucial points: 1) the objectives of the statistics and 2) attributes of the data. It is necessary that the researchers focus on the research questions to be able to choose the right statistics to answer the particular questions and it is a must that researchers have to understand the attributes of the data and statistics to be used. Then, researchers are required to understand the scale of measurement of dependent variables and independent variables, be aware of the number of dependent variables and independent

variables, understand whether the samples are interrelated or independent, know the sample numbers and sizes and understand how to interpret the statistics values gained from the statistical analysis. The last stage This involves data analysis using statistics and interpretation of the statistics values gained from the statistical analysis. At present, the statistical analysis has been greatly developed and more advanced statistics can be used to analyze more complexed research questions (Wiratchai, 2005). From the described process to use statistics and to analyze data together with the statistics development, it is possible that the samples of the present study hence needed the understanding of statistics and data analysis aspect the most.

Needs to understand the fundamentals of research methodology The finding reflected that the samples needed to comprehend how to write the operational definition of variables. It might be resulted from writing the definition needs to be applied to every ambiguous words or terminology even the words that are common among specialized experts to ensure the clear understanding of the audiences who are not the experts in the particular fields (Pratumraj, 1998). The writing of operational definition of variables has to consider 3 key points. 1) The definitions written have to be in accordance with the variables' concepts or theories. 2) The definitions written have to be related within the research's conceptual framework. 3) The definitions are required to be able to assess and measure the variables (Srisatidnarakul, 2005). Therefore, defining the operational definitions of variables is not only about defining them according to the dictionary for the basic understanding of people, but also about studying the related literatures and gaining well understanding of one's research to be able to accurately and measurably define the variables.

Needs to understand the research design The study showed that the samples needed to understand qualitative research design the most followed by future research, research and development, evaluation research, and action research. The reason might derive from the fact that the majority of the samples which were more than 80 percent were nurses. According to Chirawatkul (2005), researches in nursing have been influenced by positivism as it is a fundamental body of knowledge of biomedical science which is the key knowledge of science of nursing. However, when there was a need to further study to construct nursing theories and build body of knowledge for nursing, it was found that the quantitative research design could not fully respond to the need. It was an important turning point that qualitative research designs were then applied concurrently with the qualitative ones. However, the objectives of qualitative research are to have a deep comprehension of a phenomenon and requires an extent period of time to conduct. Therefore, the researchers are required to acquire interdisciplinary skills and ability to describe the phenomenon from the insider's perspectives. The fact influenced the samples of the present study to require the knowledge mostly on the qualitative design. Furthermore, all public health organizations and health systems has put the health issues as everyone's mission that needs cooperation to prevent oneself from illness, to promote wellness and health care of oneself; in other words, it is the age for strengthening health not regaining health. The change requires a practical body of knowledge so the trend in researching is focusing on the researches of which the results are applicable. Therefore, action researches, research and development and other applied researches can be found widely but some of the researchers still do not fully understand the methodology (Chirawatkul, 2005) which results in the researches' invalidation for citation or application and the researches are rejected eventually. This is the reason why the samples of the study expressed the need to be able to understand the various research designs.

Needs to acquire the knowledge related to statistics application and data analysis The findings showed that the needs of the samples were mostly on knowledge acquisition on application of nonparametric statistics. It might originate from the the fact that, comparing to samples sizes in social science researches, population in medical or health science field are composed of smaller sample sizes with some difficulties in finding the right samples in some rare cases. This results in selection of statistics used that is appropriate for the small population or sample sizes; hence, the use of nonparametric statistics are applied. According to Briseng (1998), attributes of the population would determine whether parametric or nonparametric statistics should be used with which formula that would help guarantee the accuracy and appropriateness of the findings within the research circumstances. Besides acquiring the knowledge in applying the appropriate statistics, researchers are required to be able to analyze and interpret data in relation to the research's objectives, hypothesis, and selected statistics.

Needs to acquire the knowledge related to presenting, concluding and discussing the findings The results of the research showed that the samples' needs were primarily on knowledge about data analysis presentation. The conclusion and discussion on the findings were at the second rank This findings correspond with the study conducted by Wongwanich and Wiratchai (2003) in that the problem occurred in presenting data analysis finding is the fact that the order of findings the researchers presented followed the order of what stated in the research instruments instead of the order of the research objectives. In case there are many varied and complexed points,

sections dividing should be clearly made with clear explanation of each section's analysis process and findings. Similarly, discussion of findings is required to be related back to theories or other relevant studies. There are numerous ways of presenting information but the key principle of presentation which is the clarity of presented information that creates a clear picture of the study is needed to be observed. (Kijpreedaborisut, 1998).

Needs to acquire knowledge in terms of research publication The findings showed that mostly, the samples needed to understand how to write research articles and secondly how to present the researches in academic conferences. The reason might emerge from the variety of research publication tactics such as writing academic articles to be published in academic journal or presenting oral or poster presentation in academic conferences. No matter which tactic to be used, the publication of the research to the public requires the precise method that aims at hitting the right target (Chirawatkul, 2005) to ensure of the benefits for both researchers and those who want to apply the findings of the researches. Researches hence become a valuable asset for job and body of knowledge development. Publishing researches in academic journals is considered the most preferable methods as it widely and greatly feeds the researches into the academic community. Once a research is selected to be applied, it is a success of that particular research conduct. Therefore, writing a research articles is of paramount importance for researchers.

Needs to understand the research project management The findings reflected that the needs of the samples were focusing on how to write a research project for requesting grants with finding the research funding agencies as the next priority. The reason might be related to the fact the researchers need to describe a research project in details to be able to receive grants from funding agencies inside and outside the organization. The project proposal needs to be written according to the standard format and is required to maintain the quality of the research project. The project proposal will then undergo various steps of quality assessment from the experts. It is necessary for the head of the research project to present it to the panel of experts to be considered whether the project is approved to carry on (Panich, 1996). Therefore, the samples of the present study wanted to have knowledge on writing a research project proposal to request for grants and to find research funding agencies respectively.

6. Suggestions for Application

There should be an academic support to the health care team of Naval Medical Department to equip them with knowledge related to research methodology as stated in the assessment findings such as organizing workshop, releasing the personnel to participate in conferences/trainings outside the department or releasing them to pursue further study.

7. Suggestions for Future Research

7.1. The present study was a needs assessment in understanding of research methodology which was perception-based. The future research can be focus on needs assessment in depth for example, using knowledge test form.

7.2. The future study should investigate the attitude towards researches and research application of the health care personnel.

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