DEVELOPMENT OF RESEARCH TOOL THROUGH ASSESSING THE KNOWLEDGE AMONG POSTGRADUATES NURSING STUDENTS AT PNS LUMHS

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ABSTRACT

Background: One of the main purposes of study was to design a research tool for data collection that enables the researcher to find answers to research questions. Data collection is the process of collecting data aiming to gain insights regarding the research topic.

Objectives: To develop a questionnaire to assess the knowledge and practice of MSN students regarding research tools.

Methodology: The research study was a cross-sectional. The target population was 33 MSN students from PNS LUMHS, The sampling technique used in the study was the convenient sampling technique.

Results: The questionnaire contained 18 items. The Cronbach's alpha reliability of the questionnaire was $\alpha = 0.927$. Validity of each item was calculated using SPSS which were also significant. A total of 33 participants were included in the study but majority 60.6% graduates were male. Majority of participants were from 31-35 years of age. Majority 75.8% graduates knew the exact definition of the research tool. 33.3% graduates had conducted research two times. 27.2% knew just one research tool. 93.9% participants who had done research used only questionnaire to collect data. 69.6% had adopted the questionnaire and got permission from the author by mail. While 24.2% had developed questionnaire and checked the reliability and validity by pilot testing.

Conclusion: The study was done to develop a questionnaire assessing the knowledge and practice of nursing students regarding research tools development. The development of questionnaire was scientific and reliable.

Key word: Research tool, Questionnaire, reliability, validity.

INTRODUCTION

A research instrument is a scientific and systematic designed tool used to collect, measure, and analyze data related to research interests and alignments. Types of instruments may include but not limited to; surveys, tests, questionnaires, achievement/aptitude tests, interviews, scales (measuring and weighing tapes), archival documents and government sources, oral histories, focus group discussion and experiment, observation forms, tally sheets, etc. One of the important research tools is questionnaire. Decision makers and researchers across all academic and industry sectors conduct surveys and questionnaires to uncover answers to specific, significant questions. In fact, questionnaires and surveys can be an effective tools for data collection required for research and evaluation. In order to develop a survey/questionnaire, first the researcher should decide how to collect the required data (1). The questionnaire is one of the common devices for collecting information and a form or instrument including a set of questions and secure answers that

respondents (from a specific population) fill to give the researcher information needed for the study. The data given from a questionnaire cannot be achieved from the secondary resources. A questionnaire is utilized for different purposes, although it is commonly used to gather statistical data. It can be designed for measuring separate variables such as behaviors, preferences, and facts (2). Many population studies use self-administered questionnaires for collection of data on socio-economic status, lifestyle, medical history, symptoms, quality of life, etc. The data are used for analysis of baseline associations between risk factors and reported health, and are used for exposure classification of study participants in follow-up studies of health outcomes. Questionnaire development for such studies seems as a straightforward task of compiling relevant and well designed items or scales. However, the process may be considerably more challenging (3). Generally, two types of questionnaires are used in practice depending on the nature of the research as structured and unstructured questionnaires. A structured questionnaire is used to collect quantitative data and is designed in such a way that it collects intended and specific information related to a problem. An unstructured questionnaire is used to collect qualitative information using basic and branching questions which are mostly open-ended (4). Questions that are open-ended, Respondents may use this tool to answer questionnaires in almost any way they see fit. In closed-ended questions respondents are given the opportunity to pick from a list of established answers. Closed-ended questions are appropriate for large-scale surveys Questions with a yes-or-no response are known as dichotomous questions Single-select and multi-select questions are the two most common varieties of multiple choice questions. A questionnaire is a research tool that asks respondents to answer questions in order to gather pertinent data. Written or spoken questions may be used in these devices. In recent years, questionnaires have grown more popular as a research method because of their speed, efficiency, and cost-effectiveness. These tools may be used to measure preferences, intentions, attitudes, and perspectives (5). Life expectancy is gradually increasing due to continuously improving medical and nonmedical interventions. The increasing life expectancy is desirable but brings in issues such as

impairment of quality of life, disease perception, cognitive health, and mental health. Thus, questionnaire building and data collection through the questionnaires have become an active area of research (6).The questionnaire development process required many decisions about a variety of issues such as content (themes, items/scales), age-group relevance, response burden, and practical matters (3). After recognizing the fundamentals of the questionnaire, the main steps that should be considered in designing a questionnaire are as following ,information needs, survey type, types of questions, writing question, organizing, pre-testing, finalizing (7). The quality of the data obtained by a specific questionnaire depends on the length and number of questions in the questionnaire, the language, and the ease of comprehension of the questions, relevance of the population to which it is administered, and the mode of administration, i.e., the self-administered or paper method or the electronic method (8). Questionnaire should not only suit with the research and the researcher but also to respondents (9). A full-fledged pilot test among the intended respondents for initial validation is carried out. The pilot testing consists of administering the final version of the questionnaire to a considerable number of intended respondents. If the sample size of pilot test is small, then the possible errors may decrease the statistical power required to validate the questionnaire. In this stage, based on the intended statistical tests and validation on the collected pilot samples, the questionnaire can be refined further to a level which can minimize the statistical errors in the final solution (4). In general, it is suggested that a sample of 30 respondents should be sufficient, which is a typical size for a pilot study in medical research (10). Test-retest reliability involves administering the questionnaire to the same group of respondents at different point of time and repeating the research. In this method, a parallel form of questionnaire is developed which is equivalent to the original one with same information but different formatted questions (called as A and B). Both forms are used to collect the sample data during the survey. Respondents are requested to fill both forms of questionnaires during the same point of time. The correlations of the response of both forms estimate the reliability of the questionnaire by the assumption that these two forms are interchangeable. This method is

developed to check whether the questions in the questionnaire are capable to measure the same underlying constructs as per the plan. In Split-half reliability measure model, the questions are split in two halves and then, the correlation of the scores on the scales from the two halves is calculated and is run through the Spearman Brown formula. This method has limitations in terms of its enhanced expense on time and effort. The Cronbach's alpha value is expected to be at least 0.70 to indicate adequate internal consistency of a given questionnaire. Low value (below 0.7) of Cronbach's alpha for a given questionnaire represents poor internal consistency $0.7 < \alpha < 0.9$ High internal consistency and reliability in a given questionnaire. $\alpha = 1.0$ Perfect internal consistency in a given questionnaire (4). Validity refers to the degree to which an instrument measure what it is set out to measure. Validity refers to the ability to produce accurate results and the degree to which an instrument measures what it is supposed to measure (11). The four validity methods, viz. face, content, criterion related and construct are respectively defined as Face Validity, Content Validity, Criterion Related Validity, Construct Validity (12).

OBJECTIVES
- ➤ To develop a questionnaire to assess the knowledge and practice of MSN students regarding research tools.

METHODOLOGY
The research was done at PNS LUMHS Jamshoro where nursing students of MSN were found. And the settings were accessible and convenient to the researchers. The research design used in this study was a cross-sectional survey. This was considered as the most appropriate design since their views and opinions were sought on Knowledge and Practice of research tools among MSN students at PNS LUMHS JAMSHORO. The target population was 33 nurses from PNS LUMHS enrolled in MSN degree program. Total 33 postgraduate students were included out of which 20 were male and 13 were female. The sampling technique used in the study was the convenient sampling technique. The data required for the study has been collected through questionnaires, primary source. Data is collected from MSN students. Based on the literature for developing research tools, a total of 18 items were prepared as a part of primary

questionnaire assessing the knowledge and practice of nursing students regarding development of research tools. There were two types of questions close ended and open ended. Written and verbal consent was obtained from the participants. The study was approved by PNS LUMHS in addition; the methods employed in this study were carried out in accordance with the approved guidelines of the school.

RESULTS
Demographics of participants
Table No. 1: Gender distribution of the participants

Items	Categories	Frequencies	Percentages
Gender	Male	20	60.6%
	Female	13	39.3%
	TOTAL	33	100%

A total of 33 participants were included in the study. All participants were MSN students at PNS LUMHS Jamshoro. Out of them most of the participants 20 (60.6%) were male and 13(39.3%) were female shown in table No. 01.

Table No.02 Age Distribution

Items	Categories	Frequencies	Percentages
Age	25-30	8	24.2%
	31-35	18	54.5%
	36-40	2	6.06%
	41-45	1	3.03%
	46-50	2	6.06%
	51-55	2	6.06%
	TOTAL	**33**	**100%**

The participant's ages were from 25 to 55 years. However most of the participants' ages were from 31-35 years shown in table No.02.

Table No 03: knowledge about research tool among MSN students.

Items	Category	Frequencies	Percentages
Knowledge about research tool.	Yes	33	100%
	No	0	0%
	TOTAL	**33**	**100%**

Table No. 03 showed that all the 33 (100%) participants had good knowledge regarding research tool.

Table No.04

Reliability through Cronbach's Alpha Method		
Case	**N**	**Percentage %**
Valid	33	100.0
Excluded	0	.0
Total	33	100.0

Number of items	18	100.0
Cronbach's Alpha of the whole questionnaire		.927

Reliability analyzed through cronbech's Alpha method, total number of cases was 33(100%).value of whole questionnaire was 0.927 shown in table No.04.

Table No.05
Reliability through Split Half Method

Split Half Reliability			
Cronbach's Alpha	Part 1	Value	.904
		N of Items	9[a]
	Part 2	Value	.795
		N of Items	9[b]
	Total N of Items		18
Correlation Between Forms			.885
Spearman-Brown Coefficient		Equal Length	.939
		Unequal Length	.939
Guttman Split-Half Coefficient			.908

Split half method also used to check reliability, item were divided into two parts. Nine items in part I and nine items in part II. Value of part I was 0.9 and value of part II was 0.795 shown in table no.05.

Table No.06
Table 3: Mean, standard deviation and Cronbach's Alpha of each questionnaire

Items	Mean	SD	N	Cronbach's Alpha
Gender	1.3939	.49620	33	.922
what is your age	2.3030	1.38033	33	.916
Education	1.1212	.33143	33	.925
Experience	2.0303	1.10354	33	.914
area of work	1.3333	.47871	33	.922
do you know about research tools	1.0000	.00000	33	.930
what it meant by research tools	1.2424	.43519	33	.923
how many times have you conducted research	3.0606	1.19738	33	.914
from following how many research tools are you aware of	3.2424	1.90444	33	.919
which research tool you used in your research	1.0606	.24231	33	.927
used RT was	1.8182	.52764	33	.922
if created yourself then how you checked validity and reliability	1.8182	.52764	33	.922
if adopted then how you got permission from the author	1.3636	.60302	33	.920
what thing made you chose this research tool	1.6061	.60927	33	.920
how much the research tool was helpful for your data collection	1.3939	1.74892	33	.949
what do you think about the importance of research tool in research	1.0909	.29194	33	.926

how many research tools have you used so far	3.0606	1.29758	33	.914
Research tools	1.7611	.61973	33	.918

Table no.06 showed that 18 items were asked to participants regarding research tool and majority of participants had good knowledge, cronbach's alpha value of each item was 0.9. All items showed with different mean and SD.

VAIDITY THROUGH CORELATION COEFFICENT METHOD

Validity of the questionnaire was calculated through Pearson correlation coefficient. It can be access through following the link. https://acrobat.adobe.com/id/urn:aaid:sc:AP:151d aa1a-b498-4260-907c-eb733660da56 .

DISCUSSION

The main objective of the study was to devolve a questionnaire assessing the knowledge and practice of postgraduate nursing students and check the reliability and validity of the questionnaire. In this study internal consistency and reliability were used to evaluate the stability and accuracy of the questionnaire. The results showed that the Cronbach's alpha for the whole questionnaire was α as0.927 indicating good internal consistency of the questionnaire. The result is consistent with the results of a study done in Pakistan reliability of the questionnaire was α = 0.927 (13). According to another study questionnaire had good internal consistency, with Cronbach's α as 0·83 (14). Another study suggests Cronbach's α value higher than 0.67 is almost acceptable (15). Another study suggest the internal consistency of 0.7 and above as high internal consistency (4). This study sought out the knowledge and practice about research tools development of 33 nursing students including male and female aging 25-60 years from People's Nursing School LUMHS JAMSHORO. The demographic analysis revealed several key findings regarding the characteristics of the participants in the study. Firstly, the gender distribution indicated a higher representation of male (66.6%) compared to females (33.9%), suggesting a predominance of male healthcare professionals in the sample. The age distribution showcased a majority of respondents falling within the age range of 31-35 years (54.5%). The mean age was 34.18 years. This suggests that the study primarily attracted participants in their midthirties, reflecting a relatively young demographic. According to a study the mean age of participants was 40.57 years **(16).** Furthermore, the educational qualifications of the participants varied, with a notable proportion holding Master of Science in Nursing (MSN) degrees (87.8%), followed closely by those with MPH (12.1%). participants' experience levels revealed a varied distribution, with a substantial proportion having 1-5 years of experience (42.4%) and 6-10 years of experience (24.2%). Those with over 10 years of experience (24.2%). The mean experience of the participants in this study was 8.57 years in a study the educational level revealed the majority of postgraduate nurses with a mean of experience 18.43years (17,18). 66.6% of the participants were working in hospitals.according to astudy on questionnaire development all the participants were from hospital. All 33(100%) have knowledge about research tools. 25(75.8%) participants know the exact definition of research tools and 8(24.2%) described the term to some extant.31 (94%) have used only questionnaire in their research while 2(6%) have not conducted any research. Only 8(24.2%) participants had created their own research tool and also checked the reliability and validity through pilot study while 23(69.6%) had adopted research tool and got permission through a mail. Only 2 (6.06%) used no any research tool, 12 (36.3%) have used only one research tools. 9(27.2%) used two research tool till now.2 (6.06%) had used three research tools. And 8(24.2%) had used more than three research tools so far.

CONCLUSION

The study was done to develop a questionnaire assessing the knowledge and practice of nursing students regarding research tools development. The development of questionnaire was scientific and reliable. And the whole questionnaire showed good reliability and validity. Thus it can be used as a scientific tool.

LIMITATIONS

- The research study is limited in People's Nursing School LUMHS Jamshoro with a limited sample size.

- This study is carried out with limited time .There was a limited time to participate with fewer resources.
- Knowledge was assessed only through descriptive statistics.

RECOMMENDATIONS

It is recommended to work on research tool development based on ever increasing researches. Workshops on research tool development should be arranged.

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