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Demonstrating Some Important Ingredients of Research to Nursing Students in Resource Limited Settings: The Case of Fako Division, South West Region

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ABSTRACT

Many components of the research process have been found to be ignored during the conduct of research by nurses, allied and applied science students either out of ignorance, lack of knowledge or no interest in such issues which are embedded mostly in quantitative research. The tendency to work more with qualitative principles of research may be responsible for such behaviours despite the high need for quantitative studies in nursing and the other allied social and applied sciences. Even where the qualitative approach is said to be in use, in-depth qualitative data analysis is absent. Based on this, a group of schools was studied for motivations to learning and using quantitative research, and the results used to demonstrate these important but neglected aspects. The results are descriptions and demonstrations of sample and sampling technique, quality control, administration of instrument, quantitative and qualitative data analysis. The simplified nature of the results on the specific components can be used by any of such students in the mist of limited resources.

Key words: Research, Quantitative data, Qualitative data, Data collection, Data analysis and Inferential statistics.
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INTRODUCTION

Using research to augment practice is not new in literature and in contextual practice all over the world. Fields of study like nursing evolved from simple beginnings (Maslow, 1968) and so complex research components may not be known. In an attempt to begin research in nursing most institutions in resource limited settings depend on using simple percentages for data analysis or just quotes from participants they were made during the data collection process. Nowadays, research in nursing and allied/applied sciences research use both high quality quantitative and qualitative data analysis processes using software packages like Statistical Package for Social Sciences (SPSS) or Atlas Ti for qualitative data analysis. The results of such studies have assisted in ameliorating patient care and eventual better outcomes. On the other hand, the lack of research due either to ignorance, lack of knowledge and or effective data analysis of research certainly has a negative impact on nursing and nursing outcomes. This is due to the fact that there is monotony of activities with no evidence - based practice. It is therefore very important to increase the use of research and such data analysis to actually make a problem known and solutions applied for better patient care. The four parameters that were exemplified for the results to be used in the demonstration of the said elements of research were: assessment of learning,

feedback and learning, instructional materials, classroom environment, teaching styles, and motivational speaking and learning.

STATEMENT OF PROBLEM

Over the years, the Departments of nursing unlike most other departments in the Faculty of Health Sciences have carried out research using quantitative descriptive methods only. The analyses of results have been based on percentages only with no further explanations of occurrences yet they are termed quantitative, cross sectional and descriptive studies. With the introduction of post graduate programmes in the Departments, the orientation moved to qualitative research were themes were supposed to emerge following focus group discussions or direct observations made and results presented. The presentation has been by use of quotes without statistical evidences. The problem was further compounded as the statistical packages were available for both quantitative and qualitative analysis after some time yet their use was still neglected in nursing and some social and applied sciences research. The question then was whether the research methods and materials taught were short of some key elements in research. Based on these there was the need to make some demonstration for a wider public consumption in Cameroon, not limited to the departments or institutions concerned.

Purpose

The main aim of the demonstration of the neglected elements of the research process was to improve on data analysis in order to avoid data wastage following poorly analyzed data and other important elements of literature that inform data collection and analysis. Hence, the meanings of theoretical, conceptual and other frameworks have been demonstrated alongside the sample size quality control qualitative and quantitative data analysis processes.

Objectives

1. To demonstrate elements of research that support evidence –based practice and that can be obtained from all parts of the research including the review of related literature
2. To demonstrate the application of component parts of research methods and materials for better generalization of research findings.

METHODS AND MATERIALS

Students from five institutions in Fako Division, Cameroon were presented with results of a study on the use and effects of motivation in learning using: assessment of learning by the teacher, feedback of the teaching, instructional materials used during teaching, classroom environment, teaching style and motivational speaking. The study was used to assess students' understanding of research elements like: research design, population and site of study, sampling technique, sample calculation, instrumentation, quality control, data validation, qualitative and quantitative data analysis processes. Five students were selected from each institution, hence out of 514 students the few were considered representatives of their schools and exercise was for a period of one month.

RESULTS

The most appropriate way of making the learning easier was the use of the demonstrations below showing elements that must be in research and which could be from the theoretical framework and other elements of research.

THEORETICAL FRAMEWORK

In this demonstration it was made clear that the basis of the subject matter studied needed to be based on some theorists and theories on motivation in order to guide the other parts of the research and prevent derailment. For instance, Abraham Maslow's Hierarchy of needs theory of 1943 (Maslow, 1970) provides the humanistic bases for theoretical framework. Though other theories of motivation exists, such as incentive theory, expectancy theory amongst others, the needs theory was used. It is essential to appreciate students' zeal to learn in a holistic manner. Bearing in mind that students have needs, it is essential to see how external factors play on their growth towards self-actualization, which embodies a wide variety such as achievement and recognition, among others which other theories focus on. The theory postulates that every individual is capable and has the desire to move up the hierarchy toward a level of self-actualization. The essence of education is to ensure that learners become lifelong learners, by developing volition- goal pursuit; this is akin to self-actualization. If teachers ensure that students' lower needs are meet, such as ensuring a proper classroom atmosphere by being non-judgmental; fair discipline for proper classroom management - provides safety; providing love and belongingness, by demonstration of desirable attitudinal qualities such as being empathic; ensuring a conducive learning

environment, students would be motivated to learn - grow towards self-actualization.

In adapting Maslow's hierarchy of needs for the study, the researcher is aware of its shortcomings. Wahba and Bridgewell (1976), found little evidence for the ranking of needs Maslow described, or even for the existence of a definite hierarchy. Hofstede (1984) criticized the order of arrangement of needs (with self-actualization, as the highest order need) as being ethnocentric. Skinner's operant conditioning theory of 1951 as applied to teaching also served as part of the theoretical framework in this study. Adequate feedback, reinforces student's zeal to learn, shapes them by providing the clues on how to proceed. Skinner postulated that supplying students with the correct answers and being informed that it is the correct answer motivates students to go on and to achieve the desired terminal behaviour. Thus, if assessment were properly done and adequate feedback given to students, they would be motivated to learn and continue learning. This theory also acknowledges that environment influences behavior learning. The researcher is aware of the criticisms of Skinner's operant conditioning for controlling and molding students against their will; and that teachers become trainers, mechanics and technicians, rather than guides in learning (Tayo, 2001). Weiner's Attribution theory as well as Atkinson achievement motivation theory would serve as further theoretical framework for the present study.

CONCEPTUAL FRAMEWORK

Often used to show the linkages in the variables and how they can be managed without derailment (Figure 1). In the scheme in Figure 1 above, independent variable is conceptualized as assessment, feedback, instructional materials, the classroom environment, teaching styles, and motivational speaking. The dependent variable, learning increase study time, focus on performance criteria, interest in subject matter, participate in-group work, keep class rules, focus on identified goals. It is further hypothesized that assessment, feedback, instructional materials, environment, teaching styles, and motivational speaking directly influence students' learning as increase study time, focus on performance criteria, interest in subject matter, participate in-group work, keep class rules, focus on identified goals but the results may be confounded by age, religious background, sex and other socio demographic parameters.

The study elements of assessment, feedback, instructional materials, classroom environment, teaching style and motivational speaking were described with summary made to the students for comprehension and follow up and application during the demonstrations of the other research components thus: Motivational strategies, assessment, feedback, instructional materials, the classroom environment, teaching styles and motivational speaking are known to serve as motivation for learning; enhancing intrinsic motivation and enabling learners to improve on learning. Assessment, when appropriately used enables students to engage in deep learning rather than surface learning; feedback provides clarity on students' performance; instructional materials serve more as an arousal of students' interest to engage in learning; the classroom environment provides students with the necessary dynamics for learning; teaching styles enable students to employ different learning styles while motivational speaking instills confidence, self-esteem permitting students to improve on learning.

Research Design

In the demonstration, the survey method was taken as the research design and described as " A survey is a research design where the researcher presents oriented methodology used to investigate population by selecting samples to analyse` and discover occurrences" (Oso and Onen, 2005). Reasons for choosing the design were demonstrated as "A survey was ideal for the present study because motivation is a concept that cannot be measured, or directly observed. Thus, it can only be described as it is or would be. Given the limited time frame, the survey was best suited for this work because it was possible to have rapid data collection; the population could be understood from a sample and it was also economical".

Population and Study Site

The demonstration was intended to describe the study population and the site. "The present study was conducted in (1) the Department of nursing, Faculty of Health Sciences, University of Buea (2) Training School for Health Personnel, State Registered Nursing, Limbe and (3) St. Francis School of Health Sciences, (State Enrolled Nursing), Buea" with reasons demonstrated for choice of site as:. "These schools were chosen because they cover the various programmes of nursing training in Cameroon who could data on students' perceptions of the effects of motivational strategies on their learning".

Sampling Techniques

Was demonstrated to show the selection of schools and that of the students thus: "Purposive sampling technique was used to include schools that were appropriate for the study while nursing students at all levels were randomly selected". The method that should be most appropriate

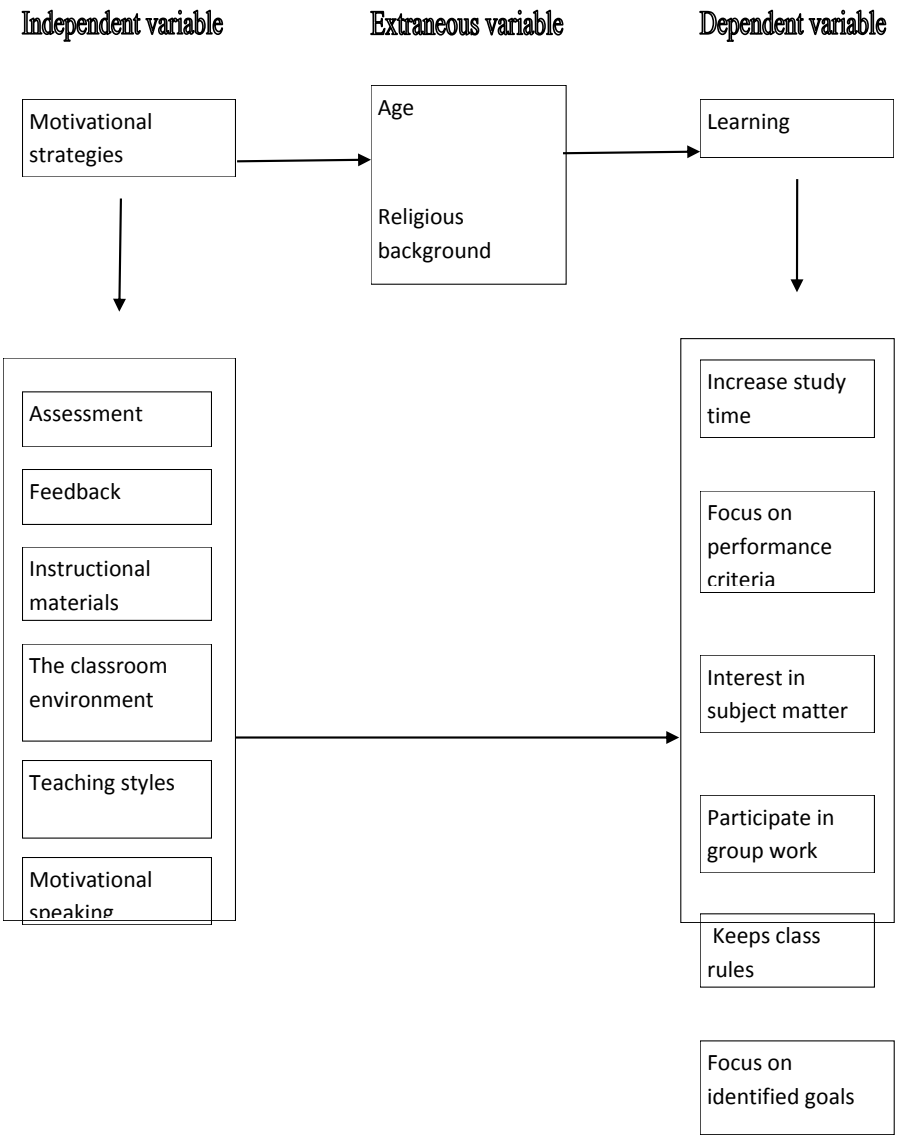

Figure 1. Relationship among the variable.

was demonstrated as: “List of approved Nursing schools in Fako division. (1) Redemption Medical Foundation (RMF), Muyuka (2) Nursing Assistant School (NAS), Limbe (3) St. Francis School of Health Sciences (SFSHS), Buea and (4) Training School for Health Personnel, State Registered Nursing (TSHP-SRN), Limbe. (Source: Delegation of Public Health, South West Region). Department of Nursing, Faculty of Health Sciences (FHS). Unversity of Buea”. Which were considered in the study because the sampling used was purposive- meeting the purpose of the research as on the Table 1.

Sample Size Calculation

In the demonstration, it was made clear the source of the sample size calculation should be known otherwise it will just the writers assumption. Hence the discussion was thus: “sample size was estimated using sample calculation for one proportion (Nana, 2010) with the support of Epi Info 6.04d (CDC, 2001)”.

$$n = \frac{NZ^2P(1-P)}{d^2(1-1)+Z^2P(1-P)} \quad (1)$$

Table 1. Showing schools for the study.

Names of nursing schools	Population
FHS, University of Buea	137
TSHP, Buea	139
RMF, Muyuka	30
NAS, Limbe	36
SFCHS, Buea	172

Sources: Authorities of the various schools.

Table 2. Sample size per school.

Ames of nursing institution/schools	FHS	TSHP	SFCHS	Total
Population	137	139	172	448
Percentages	30.6%	31%	38.4%	100%
Sample size	58 < 65 < 71	59 < 66 < 72	73 < 82 < 89	190<213<232

Where: N = total population, Z = Z value corresponding to the confidence level, d = absolute precision, P = expected proportion in the population and n effective = n*design effect. The continuation was thus: “in the context of this study, the following parameters were used to estimate the sample size: Size of the population = 448. Desired precision = 4%, Expected prevalence = 90%, Confident level = 95% and Design effect = 1.0%“. In the following steps the demonstrations were made clearer as: “Step 1: Situate P within 95% CI using the formula.

$$P-(Z_{\alpha/2})\sqrt{pq/n} < P < P+(Z_{\alpha/2})\sqrt{pq/n} \quad (2)$$

Where: P= prevalence, n= sample size at a given expected prevalence (here 90%). Thus, considering this proportion, a confidence level of 95%, a design effect of 1. - q = 1-P. - $Z_{\alpha/2}$ =level of significance = 1.96. The conjectured proportion within 95% Confidence interval should then be obtained as: 0.88 < 0.90 <0.92. Step 2: Calculate the sample size for the ranged values of P at 95% CI. Using the proportion range 0.88 < 0.90 <0.92 and applying the formula above, the estimated sample sizes with the lower and upper bound at 95% CI should be as follows: “For a total study population of 448, the estimated sample size was 190 < 213 < 232”. The sample size should then be shared to the various schools after been weighted by the population size as demonstrated on Table 2. From this table the schools with very small sample sizes must be excluded as they no longer meet the purpose- perceptions of students who at least should be many for the results to have a meaning. Hence three out of the five schools would be eligible for use. Too small sizes would entail serious discrepancy in sample distribution. Consequently, the sample should be shared to the three remaining institutions weighted by their population.

Instrumentation

In the demonstration, two kinds of instruments were used that is the questionnaire and Focus Group discussion (FGD) as follows: “self-made questionnaires (developed from literature review) and FGDs were used for data collection. Two FGDs constituting six (6) male and seven (7) female students, respectively were organized in order to avoid gender bias". The questionnaire was described beginning with the reason for its use whenever it is to be used thus: “the aim of the study was to obtain information concerning a concept that cannot be directly measured, thus it relied on the use of questionnaires. A questionnaire is a collection of items to which a

respondent is expected to react in writing (Oso and Onen, 2005)”. The arrangements of items on the questionnaire were also shown and the responses should be presented as: “the questionnaire was rearranged to ensure that they reflected the specific objectives of the study, and students’ responses were organized on a four-point Likert-scale: Strongly Disagree (SD) Disagree (D) Agree (A) and Strongly Agree (SA)”.

Quality Control

Quality control was demonstrated as: validity (content validity, pretest, content validity index, and missing values), and reliability.

Validity

Validity was demonstrated as the ability to produce findings that are in agreement with theoretical or conceptual values (Amin, 2005). It was shown to be stated as: “the validation in this study was based on content validity, which focused upon the extent to which the content of the instrument corresponded to the content

of the theoretical concept it was designed to measure. A questionnaire based on the conceptual variables of the study was pretested among students in Bamenda- 400 km away from the study population to avoid contamination- prior knowledge of the subject matter which have an influence on the final results of the study. After the pretest (pilot study), amendments were made, irrelevant items were removed and other items adjusted so that each item should relate to the topic under investigation". For content validity, the demonstration used an index text: "content validity was censured by using the content validity index (CVI). To arrive at the statements that were judged valid the inter-judge coefficient of validity was computed using the following formula: CVI = (No. of judges declared item valid)/ (total No of judges). 2/2 = 1. Where 1 represents the inter-judge coefficient validity for an item and is repeated for all the items of the instrument in order to compute an average thus: CVI for questionnaire 2/2 = 1". Validity was further demonstrated by using the missing value analysis as shown in Table 3.

The first approach to arrive at the missing value was based on the question thus: "using the questionnaire items: Proportion of questions with missing responses, Number of questions with missing responses/Total number of questions =0/54 =0.0%". The second approach: using the responses was demonstrated as: "Average proportion of missing responses: Number of missing responses/the total number of responses =0/216, =0.0%". However, students were made to understand that most often, rate of missing value (MV) of less than 5% is not critical.

Reliability

Reliability was demonstrated to refer to the consistency of measurement. Shown as an important indicator that determines a good quantitative research instrument. It equally refers to the consistency, constancy or dependability, accuracy and precision with which an instrument measures the attributes it is designed to measure. In addition to these, reliability refers to the consistency, stability, predictability, accuracy, dependency or trustworthiness of the scores obtained; how consistent they are for each individual from one administration of an instrument to another and from one set of items to another (Amin, 2005; Nana, 2010). It was demonstrated as being in direct relationship with the validity of the instrument which is often assessed using a pilot study conducted with other randomly selected participants like students in this case from distant populations (other students). Reliability was further demonstrated as also obtained from internal consistency using scales produced by authors in research like Cronbach (Table 4). In the Cronbach's Alpha reliability satisfactory and non-satisfactory coefficients exist. Generally, above 0.5 Alpha reliability coefficient is assumed satisfactory and the instrument deemed reliable.

Data Validation

Data validation was demonstrated using missing value analysis differentiated from missing value in validity above as missing value 11 (Table 5). In it, the percentage of the missing value should be small enough to ensure reliability of the data and results. It was emphasized for studies on perceptions for example, a percentage of missing values of 1.9%, as above is small enough for the data to be validated based on the indicators. Reliability analysis used case processing and reliability statistics in which the case processing showed valid and excluded which gave the total sum of the sample population of the study that was used in making the demonstration (Tables 6 and 7). The summary helps the researcher at a glance to view the sampled population and missing values if any a. List-wise deletion based on all variables in the procedure. This test was demonstrated thus: "of the 46 items included in the test, the Cronbach's Alpha coefficient was 0.863 computed with 71.2% of the cases. The exclusion rate was low and Alpha high enough for the data to be considered valid and responses consistent to each other".

Qualitative Data Analysis

It was made clear that qualitative data analysis takes a different form even when both quantitative and qualitative data were used. In the demonstration, analysis of qualitative data was from FGDs with themes emerging as the discussion was flowing. It was made clear that such themes could be very systematic and analysed following the systematic process of content analysis. The first stage could involve deciding on the level of analysis where, single words, clauses and sets of words or phrases are coded. The researcher could use a code list developed based on the major indicators of the study. In it, the primary documents of textual data could be coded for existence and for frequency of concepts by coding for every single positive or negative word or phrase that appeared. During the coding it is assumed that any idea that emerges at least once is relevant. After taking the generalization of concepts into consideration, the researcher then creates translation rules that allowed the streamlining and organization of the coding process so that what was being coded for was actually that which was intended to be coded. This stage enabled the researcher to determine the meaning of words and what

Table 3. Missing value analysis 1.

Univariate statistics							
	N	Mean	Std. Deviation	Missing		No. of Extremes	
				Count	Percentage	Low	High
A1	4	1.00	.000	0	.0	.	.
A2	4	1.25	.500	0	.0	0	0
A3	4	1.50	.577	0	.0	0	0
A4	4	2.25	.500	0	.0	0	0
B1	4	2.50	.577	0	.0	0	0
B2	4	2.00	.816	0	.0	0	0
B3	4	3.00	.816	0	.0	0	0
B4	4	2.75	.500	0	.0	0	0
B5	4	2.75	1.258	0	.0	0	0
B6	4	3.25	.957	0	.0	0	0
B7	4	2.75	1.258	0	.0	0	0
B8	4	2.00	.000	0	.0	.	.
C1	4	2.50	1.291	0	.0	0	0
C2	4	3.25	.957	0	.0	0	0
C3	4	3.00	1.414	0	.0	0	0
C4	4	1.75	.957	0	.0	0	0
D1	4	2.00	.816	0	.0	0	0
D2	4	2.00	.816	0	.0	0	0
D3	4	2.00	1.414	0	.0	0	0
D4	4	3.00	.816	0	.0	0	0
E1	4	2.50	1.000	0	.0	0	0
E2	4	1.75	.957	0	.0	0	0
E3	4	2.25	1.500	0	.0	0	0
E4	4	2.25	.957	0	.0	0	0
F1	4	2.50	1.000	0	.0	0	0
F2	4	2.50	1.000	0	.0	0	0
F3	4	2.50	1.291	0	.0	0	0
F4	4	2.00	.816	0	.0	0	0
F5	4	3.25	.500	0	.0	0	0
F6	4	3.75	.500	0	.0	0	0
F7	4	3.00	1.414	0	.0	0	0
F8	4	3.50	1.000	0	.0	0	0
F9	4	1.75	.500	0	.0	0	0
F10	4	3.25	.957	0	.0	0	0
F11	4	3.50	.577	0	.0	0	0
F12	4	2.50	1.000	0	.0	0	0
G1	4	4.00	.000	0	.0	.	.
G2	4	3.50	1.000	0	.0	0	0
G3	4	3.25	.500	0	.0	0	0
G4	4	2.75	.500	0	.0	0	0
G5	4	2.75	1.258	0	.0	0	0
G6	4	3.50	.577	0	.0	0	0
G7	4	3.00	.816	0	.0	0	0
G8	4	3.25	.500	0	.0	0	0
G9	4	2.00	.816	0	.0	0	0
G10	4	2.75	.957	0	.0	0	0
G11	4	2.50	.577	0	.0	0	0
G12	4	3.25	.500	0	.0	0	0
G13	4	2.50	.577	0	.0	0	0
G14	4	2.50	1.000	0	.0	0	0
G15	4	2.00	.816	0	.0	0	0
G16	4	2.25	.957	0	.0	0	0
G17	4	3.25	.500	0	.0	0	0
G18	4	3.25	.500	0	.0	0	0

they stood for so as to know where to code each statement. The coding is better done with the use of the Atlas Ti software noting the version like version 5.2 in this case (Atlas Ti GMBH 2008). Coding with a computer is

Table 4. Internal consistency of the scale.

Component	Cronbach's alpha reliability coefficient	Number of items	N
Motivation to choose nursing	0.914	8	4
Motivational preferences	0.504	8	4
Component F	0.579	12	4
Component G	0.687	18	4

Table 5. Missing values analysis II.

	N	Missing	
		Count	Percentage
a1	208	0	.0
Lvl2	208	0	.0
a3	208	0	.0
a4	208	0	.0
b1	207	1	.5
b2	208	0	.0
b3	207	1	.5
b4	205	3	1.4
b5	206	2	1.0
b6	206	2	1.0
b7	208	0	.0
b8	206	2	1.0
b9	207	1	.5
b10	201	7	3.4
b11	205	3	1.4
b12	207	1	.5
b13	207	1	.5
b14	207	1	.5
b15	200	8	3.8
b16	203	5	2.4
b17	206	2	1.0
b18	207	1	.5
b19	205	3	1.4
b20	202	6	2.9
b21	204	4	1.9
b22	199	9	4.3
b23	205	3	1.4
b24	205	3	1.4
c1	203	5	2.4
c2	205	3	1.4
c3	203	5	2.4
c4	203	5	2.4
c5	202	6	2.9
c6	201	7	3.4
c7	204	4	1.9
c8	201	7	3.4
c9	201	7	3.4
c10	197	11	5.3
c11	202	6	2.9
c12	204	4	1.9
c13	203	5	2.4
c14	202	6	2.9
c15	200	8	3.8
c16	203	5	2.4
c17	203	5	2.4
c18	203	5	2.4
c19	203	5	2.4
c20	202	6	2.9
c21	204	4	1.9
c22	203	5	2.4
Total	10207	193	1.9

Table 6. Case processing summary.

		N	Percentage
Cases	Valid	148	71.2
	Excluded	60	28.8
	Total	208	100.0

Table 7. Reliability statistics.

Cronbach's alpha coefficient	N of Items
.863	46

Table 8. Interpretation of correlation coefficient 'r'.

Range of values for r	Interpretation
r= 0	No correlation
0 < r <0.25	very weak positive correlation
0.25 ≤ r < 0.5	Weak positive correlation
0.5 ≤ r < 0.75	Strong positive correlation
0.75 ≤ r < 1	Very strong positive correlation
r= 1	Perfect positive correlation

one of contemporary conceptual analysis' assets; by inputting categories of data, content analysis programmes easily automate the coding process and examine huge amounts of data, and a wider range of texts, quickly and efficiently. Once the coding is done, the researcher examined the data and draws possible conclusions and generalizations.

Quantitative Data Analysis

The demonstration of the quantitative data was really intended to assist students use other advanced data analysis methods not just percentages. Hence, the data collected from the field were subjected to both descriptive and inferential statistical analyses using Statistical Package for the Social Sciences (SPSS) Version 17.0 (SPSS Inc. 2008) which was the available version at the time of the demonstration. This was because the software is used for descriptive data analysis, comparisons between groups and correlation between variable (Nana, 2010). Hence, the descriptive statistics was used to present the distribution of participants using frequencies and proportions. Component aggregated scores; composite variables were computed using Multiple Response Analysis (MRA). Spearman's rank correlation coefficient (Spearman's rho) was demonstrated and used to assess the level of influence of independent variables on the dependent variable.

The Spearman correlation coefficient is the nonparametric version of Pearson correlation coefficient between ranked variables (Myers and Arnold, 2003). Spearman's correlation coefficient, (ρ, also signified by r_s) measures the strength of association between two ranked variables. The *n* raw scores X_i, Y_i are converted to ranks x_i, y_i, and ρ is computed from these. The statistics were presented using the exact calculated p-value. The formula for Spearman's rank correlation when the data does not have tied ranks is given by:

$$\rho = 1 - \frac{6\sum d_i^2}{n(n^2 - 1} \quad (3)$$

Where: d_i = difference in paired ranks, *n* = number of cases. Interpretations were demonstrated as on the Table 8. The correlation coefficient 'r' ranges from +1 to -1. If r carries the negative sign (-), the correlation is therefore negative. The correlation coefficient r, quantifies the direction and magnitude of correlation. P measures the strength of association between two ranked variables. While r gives an idea of the strength of the correlation, the P-value associated to it gives an idea of how consistently the values of one variable change alongside that of the other. The P value answers this question: If there really is no correlation between X and Y in the overall population, what is the chance that random sampling would result in a correlation coefficient as far from zero (or further) as observed in the said study? If the P value is small, the idea that the correlation is a

Table 9. Interpretation of P-values.

Number of stars (*)	Interpretation
One star (*)	Correlation is significant at the 0.05 level (P <0.05)
Two stars (**)	Correlation is significant at the 0.01 level (P<0.01)
Three stars (***)	Correlation is significant at 0.001 level (P< 0.001)

coincidence is rejected. If the P value is large, the data do not give any reason to conclude that the correlation is real. The interpretation is as below (Table 9). Measurements of associations or relationship between study indicators and background variables were demonstrated using Chi-Square test for homogeneity of proportions. In all, the statistics were also demonstrated and discussed at 0.05 significant level (α=0.05). Percentages were not demonstrated but emphasis was laid on the fact that was percentages are used, these must be determined by:

$$\frac{\text{Number of Responses}}{\text{Sample}} \times 100$$

CONCLUSION

The demonstrations made in this article have shown that components of research need to be well taught to nursing, social and applied science students to enable the research carried out by these influential groups of professionals to be credible and good for generalization. The areas demonstrated: research design, population of the study, study site description, sampling techniques, sample size calculation, instrumentation, quality control, data validation quantitative data analysis and qualitative data analysis would assist students conduct better research that add to evidence based practice. Support from literature has also demonstrated its capacities in providing information for the development of the instrument for data collection.

RECOMMENDATIONS

The research process should be taught to mature individuals with all its component parts well explicit. In the teaching of research, the links in the components should be made clear. The importance of each component and its contribution to the research in its totality should be demonstrated during teaching and the importance of research in evidence-based practice must also be emphasized.

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