



**ASSOCIATION BETWEEN AGE GROUP, GENDER AND LEARNING PREFERENCES
OF NURSING STUDENTS IN SCHOOLS OF NURSING IN ANAMBRA STATE**

*Jovita Ochi, Samuel Ogenyi and Noreen Agbapuonwu

*Corresponding Author: Jovita Ochi

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ABSTRACT

Learning preference is the way that different students learn. The learning preferences are relevant because students acquire and process information through different methods such as seeing, hearing, reading and touching. The study assessed the association between age group, gender and learning preferences among nursing students in Schools of Nursing in Anambra state. Descriptive cross-sectional survey design was adopted for the study. The respondents were 342 students selected by Random Sampling Technique. Instrument used for online data collection was Visual, Aural, Read/Write, Kineasthetic questionnaire version 8.01 and the researcher's demographic questionnaire. The respondents filled the questionnaire online based on their levels of study. Data were analyzed using Visual, Aural, Read/Write, Kineasthetic standard algorithm, Statistical Package for the Social Sciences version 25. Descriptive statistics was presented in frequency tables and percentages. Chi-square was used to test the hypotheses at p-value < 0.05 significance level. Findings showed that Age group and gender had significant associations $\chi^2=58.37$; $p<0.001$ and $\chi^2=37.95$; $p<0.001$ respectively with learning preferences of the students. Assessment of the learning preferences of the students is thus, an input of great value in nursing education. The knowledge may help educators to plan teaching methods based on learning preferences; the use of varied teaching methods that address different learning preferences of the students would optimize learning and improve their academic performance. Preparation of Nursing Curriculum that utilizes more active strategies to accommodate the diverse learning preferences of the students in their different age groups and gender is recommended.

KEYWORDS: Nursing students, age, gender, association and Learning Preferences.

INTRODUCTION

Every student has a learning preference and none is superior or inferior to the other, but only varies with understanding characteristic strengths and weaknesses (Francis, 2016; Weng, Ho, Yang and Weng, 2019). Assessment of learning preferences of nursing students is key to ensuring a well-directed education which according to Biffu, Dachew, Tiruneh, Ashenafie, Tegegne, Worku (2018); Kaddaoura, Van Dyke and Yang (2017); Kaya, Senyuva and Bodur (2017), promotes critical thinking, which is one of the essential skills that prepares them for clinical practice, enabling them to manage patients' problems effectively and make best clinical decisions. Assessing their learning preferences promotes lifelong learning as it improves their learning strategies and challenges educators to vary instructional methods so as to accommodate the different learning preferences of the students, maximize their understanding of concepts and increase their academic performance (Mcallister, 2015).

Unfortunately, most educators do not consider the learning preferences of the students thereby using one or

few instructional methods to the detriment of some students (Hallin and Hallin, 2014). NMCN Curriculum (2017) noted that preference shall be given to teaching methods that are interactive and in addition to the instructional strategies that are most effective for improving critical thinking skills in nurses. As listed by Van Der Wege and Keil (2020), and Von Colln-Appling and Guiliano (2017) they include small group activities, question-and answer, clinical scenarios (case studies), role performance, discussion, concept mapping, written documents; added demonstration, tutorial, problem solving techniques, team teaching, seminar, reflective learning (Problem-based learning) and electronic assisted techniques (video, computer). However, in teaching nursing students, these instructional strategies are not commonly used due to short time allotted for each course which is devoted to the traditional lecture/discussion method. The days of long hours of lecture are over (Van Der Wege and Keil, 2020 and Von Colln-Appling and Guiliano, 2017). An educational programme that encourages a single learning preference will certainly fail to meet the learning needs of many students. As a result, poor comprehension, poor retention and frustration could

arise, leading to poor academic performance and this subsequently affects lifelong learning (AlMezeni and Almaskari, 2021) thus fail to meet the ever-changing needs of the nursing profession.

AIM OF STUDY

The aim of this work was to ascertain the Association between age group, gender and learning preferences among nursing students in school of nursing in Anambra State.

RESEARCH QUESTIONS

- What is the association between age group and learning preferences of nursing students in Schools of Nursing in Anambra State?
- What is the association between gender and learning preferences of nursing students in Schools of Nursing in Anambra State?

MATERIALS AND METHOD

Research Design

A descriptive cross-sectional research design was adopted for this study to assess Association between age group, gender and learning preferences among nursing students in school of nursing in Anambra State. This design is appropriate because descriptive studies explains characteristics that exist in a group at a given point in time and make inferences about their possible relationships (Cherry 2019). This method was chosen for the study because it provides valuable information from the population with reference to the characteristics, frequency and relationship between variables that exist in

the Association between age group, gender and learning preferences among nursing students in school of nursing in Anambra State.

Area of the Study

The study was conducted in Anambra State which is one of the thirty-six States in Nigeria, located at the south-east geopolitical zone of Nigeria with Awka being its capital. There are seven Schools of Nursing (SON) in Anambra State of which two are Government institutions and five are Private institutions. Nnamdi Azikiwe University Teaching Hospital, Nnewi (NAUTH) and School of Nursing, Chukwumeka Odumegwu Ojukwu University Teaching Hospital, Nkpor (COOUTH) are Government Schools of Nursing. The Private Schools of Nursing include: College of Nursing, Our Lady of Lourdes Hospital, Ihiala; School of Nursing, Iyienu Hospital, Ogidi; School of Nursing, St. Charles Borromeo Hospital, Onitsha; College of Nursing, Amichi; and College of Nursing, St. Joseph's Hospital, Adazi. All these schools are within a distance of 30-40km from each other.

Ethical consideration

A letter for Ethical clearance was written and approval was obtained from the Human Research and Ethics Committee of Nnamdi Azikiwe University, Faculty of Health Sciences. Copyright permission was obtained from the developer of the standardized instrument. Informed consent was obtained from the participants and confidentiality of information was ensured.

Population of the Study

Table 1: Population of Schools of Nursing.

S/N	Name of School and Level of study	Population
1	SON, NAUTH	
	100 Level	104
	200 Level	62
2	300 Level	77
	SON, COOUTH	
	100 Level	50
3	200 Level	59
	300 Level	51
	SON, IYI-ENU	
4	100 Level	120
	200 Level	58
	300 Level	50
5	SON, IHIALA	
	100 Level	88
	200 Level	120
6	300 Level	89
	SON, ST. CHARLES BORROMEO	
	100 Level	100
7	200 Level	60
	300 Level	51
	CON, AMICHI	
8	100 Level	98
	200 Level	77
	300 Level	45

7	CON, ADAZI	
	100 Level	41
	200 Level	69
	300 Level	50
	TOTAL	1519

Source: Schools' nominal roll April, 2021

Sample and Sampling Technique(s) = 316.62

The sample size was determined using Taro Yemane's formula = 317

$$n = \frac{N}{1 + N(e)^2}$$

Where

n = Sample size

N = Total population

e = Error of sample or level of significance - 0.05

1 = Unit (A constant)

$$n = 1519/1+1519 (0.05)^2$$

$$= 1519/ 1+1519 (0.0025)$$

$$= 1519/1+ 3.7975$$

$$= 1519/ 4.7975$$

The sample size was 317 but to make up for attrition and exigencies, the researcher added 10% of 317 which is 32. Sample size was therefore 317+32=349.'

The sampling technique

Multi Stage Sampling Technique was used to select the participants.

Stage 1: The Schools were clustered into two: Government Schools of Nursing and Private Schools of Nursing.

Table 2: Government Schools of Nursing and Private Schools of Nursing.

Government Schools of Nursing	Private Schools of Nursing
SON NAUTH Nnewi	SON Ihiala
SON COOUTH Nkpor	SON Iyienu
	SON St. Charles Borromeo
	College of Nursing Amichi
	College of Nursing Adazi

Stage 2: The two Government schools were selected using census method.

Stage 3: Simple Random Sampling Balloting Technique was used to select two Schools (College of Nursing, Adazi and College of Nursing, Amichi) from the sample frame of Private Schools.

Stage 4: Proportionate Sampling Technique was used to determine the number of participants to be selected from

each of the four Schools as well as from the different levels of study in each School.

This was determined with the formula: $P = X/N$

Where X = Number of successes

N = Size of the sample in question

Stage 5: Simple Random Sampling Balloting Technique with replacement was used to select participants from each level of study.

Table 3 Distribution of Participants in the selected Schools.

S/N	Name of School And Level of study	Population of Participants in the selected Schools	Sample of the Participants to be selected from the Schools
1	SON, NAUTH		
	100 Level	104	47
	200 Level	62	28
	300 Level	77	34
2	SON, COOUTH		
	100 Level	50	22
	200 Level	59	26
	300 Level	51	23
3	CON, AMICHI		
	100 Level	98	44
	200 Level	77	34
	300 Level	45	20
4	CON, ADAZI		
	100 Level	41	18
	200 Level	69	31
	300 Level	50	22
	TOTAL	783	349

Inclusion Criteria

- Availability of the students at the time of data collection.
- Willingness of the students to participate in the study.

Instrument for Data Collection

An adapted VARK standardized questionnaire version 8.01 alongside a questionnaire of demographic information were used to collect data from the participants. The questionnaire consisted of 20 items which answered the research questions in the study. The items were grouped into A and B sections. Section A, designed by the researcher, consisted of 4 items aimed at eliciting the demographic characteristics of the age group and gender of the respondents. Section B, developed by Neil Fleming (author of the instrument), did consist of 16 questions aimed at assessing the learning preferences (Visual, Aural, Read/write and Kinaesthetic) of the participants. Each question had four options (A to D); each option represented one category of learning preference: V-Visual, A-Aural, R-Read/write, K-Kinaesthetic. Each respondent could select one or more options and the scoring chart used to ascertain the learning preference of the participant. Therefore, every participant could acquire a minimum of zero score in each preference; the selection of one option indicated that the student had uni-modal preference while the selection of two or more options of almost equal scores, indicated multi-modal preference.

Method of Data Collection

Data was collected using a questionnaire of demographic information including Age group and Gender. The developer of the instrument, Neil Fleming, set up VARK subscription site for the researcher and created a web address for online filling of the VARK questionnaire by the participants; also sent the administration web address for the researcher to access the results of the participants. A hyperlink to the questionnaire was created by the researcher for the participants to aid easy access to the website. The researcher obtained a letter of introduction from the Head of the Department of Nursing Sciences with which she visited the selected Schools of Nursing within one week to obtain permission from the Heads of Schools to embark on the study; different days were fixed for the researcher to return to the schools for data collection. The researcher had a trained assistant who assisted in the process of data collection. The assistant was given a day training on the research topic, concept of learning preferences, selected schools for the study, instrument for data collection and method of data collection.

On scheduled days, the students were made available in the classrooms of their respective schools, 'Yes' and 'No' were written on pieces of paper, put in a bag and shuffled thoroughly; each student was allowed to pick. Those who picked 'yes' were allowed to participate in the study while those who picked 'No' were not allowed

to participate in the study. Those who picked 'Yes' but declined to participate were replaced until the needed number of participants was gotten. Selected participants were instructed accordingly in their various schools and informed consent was obtained from them. Each participant was given a code to avoid non participants' access to the website. The hyperlink was made available to them; a smart phone and internet access were provided to aid easy access to the link. The participants filled the VARK questionnaire online based on their levels of study and submitted immediately; collection of data lasted for two months. A total of 342 questionnaires were properly filled and submitted, thus the return rate of the questionnaires was 98.3%.

METHOD OF DATA ANALYSIS

Analysis of the data was done using SPSS package version 25; results in the subscription system were automatically analyzed using VARK standard algorithm. Descriptive statistics were presented in frequency tables and percentages and used to measure the objectives.

RESULTS

Demographic Data

Table 4 Demographic Characteristics of Nursing Students.

Characteristics	Frequency	Percentages (%)
Age (years)		
18-21	172	50.3
22-25	122	35.7
26-29	40	11.7
30-33	8	2.3
Gender		
Male	64	18.7
Female	278	81.3

n = 342

Table 4 showed the demographic characteristics of Nursing Students. According to the age, majority were between 18-21 years while those between 30-33 years were the least in number. Majority of the students were females.

Table 4.1 Chi square test of association between Age Group, Gender and Learning preferences of Nursing Students in Schools of Nursing in Anambra State.

Variables		Frequency (%)				Total (%)	χ^2 (<i>p</i> -value)
Multi-modal		Uni-modal					
		Visual	Aural	Read/ Write	Kinaes- thetic		
Age (Years)							
18-21	59 (34.3)	36 (20.9)	28 (16.3)	31 (18.0)	18 (10.5)	172 (100)	58.37;
22-25	63 (51.6)	5 (4.1)	19 (15.6)	15 (12.4)	20 (16.4)	122 (100)	<i>p</i> =0.00*
26-29	11 (27.5)	4 (10.0)	17 (42.5)	0	8 (20.0)	40 (100)	
30-33	1 (12.5)	0	3 (37.5)	4 (50.0)	0	8 (100)	
Gender							
Male	45 (70.3)	0	10 (15.6)	2 (3.1)	7 (10.9)	64 (100)	37.95;
Female	89 (32.0)	45 (16.2)	57 (20.5)	48 (17.3)	39 (14.0)	278 (100)	<i>p</i> =0.00*

Table 4.1 showed that majority of the students between 18-21 years were more multi-modal in their learning preference. They, however, had uni-modal preference too, with Visual being preferred by the majority while the least preference for those in this age group was Kinaesthetic. The students between 22-25 years also had preference for multi-modal learning while Kinaesthetic was their uni-modal learning preference and the least preferred being Visual. The students between 26-29 years had uni-modal preference with Aural being in the majority; None in this age group had preference for Read/write. Half of the students who were between 30-33 years had uni-modal preference for Read/write followed by Aural but had no preference for Visual and Kinaesthetic learning.

Data was analyzed using Chi-square and values were significant at $p < 0.05$.

The result showed that there was a significant association ($\chi^2=58.37$; $p < 0.001$) between age group and the learning preferences of nursing students in Schools of Nursing in Anambra State.

Majority of male and female students had multi-modal preferences. For the uni-modal preference, Aural was most preferred by both, followed by Kinaesthetic for male and Read/write for female. Male students, however, had no preference for Visual learning while female students made use of all the sensory modalities (V, A, R, K).

Data was analyzed using Chi-square and values were significant at $p < 0.05$.

The result showed a significant association ($\chi^2=37.95$; $p < 0.001$) between gender and learning preferences of nursing students in Schools of Nursing in Anambra State.

DISCUSSION

Association Between Age Group, Gender and Learning Preferences of Nursing Students In Schools of Nursing In Anambra State.

Age group and Learning Preferences.

Learning preferences were analyzed between four age groups (years). Result from Table 4.1 showed that those

between 22-25 were more multi-modal in their learning preference, followed by those between 18-21 (34.3%) while their uni-modal preference was for Visual and Kinaesthetic respectively. The students between 26-29 and 30-33 were more uni-modal in their learning with preference being for Aural and Read/write respectively. Thus, learning preference of the students differed with age group. Chi-square test of association done as shown in Table 4.1 revealed that there was a significant association $p < 0.05$ between age group and the learning preferences of nursing students in Schools of Nursing in Anambra State. This was expected. These differences may be due to the developmental processes of the human person that varies with age which thus affects the learning preference.

This finding was in consonance with the finding of Khanal et al, (2019) where both age groups (above and below 20 years) though multi-modal learners, varied in their uni-modal leaning preferences. The finding supports the studies of Alkooheji and Al-Hattami (2018), Corbin (2017) and which revealed significant difference between learning preferences of students and age. This finding was however, at variance with the findings from some previous studies: Hornamand et al. (2021), Mpwanyana and Dockrat (2020), Gabal and Hussein (2020), Latif et al. (2019), Madu et al. (2019). These studies reported that there was no significant association between age and learning preference. Other factors like genetic composition, and life experiences may account for this variation.

Gender and Learning Preference

In this study both males and females were found to have multi-modal preferences as shown in Table 4.1. This may be attributed to the fact that both males and females are taught the same courses by the same teachers and some courses taught may be better understood by using multiple sensory modalities hence both genders had multi-modal preferences. This may also account for those with uni-modal preference, where Aural learning was the most preferred for both genders.

That notwithstanding, Kinaesthetic was the next preferred for males, then Read/write, they had no visual preference while Read/write was the next preferred for females. Chi-square test of association done as shown in Table 4.1 revealed that there was a significant association $p < 0.05$ between gender and the learning preferences of nursing students in Schools of Nursing in Anambra State. This variation was expected and it may be due to difference in genetic composition of males and females.

The findings strengthened the evidences revealed by Esewe and Ogunleye (2021), Mpwanya and Dockrat (2020), Nja *et al.* (2019), Alkooheji and Al-Hattami (2018), Aldosari *et al.* (2018) and Corbin (2017) which showed statistical significant differences between gender and learning preferences. The fact that there was significant difference in their learning styles based on gender became more interesting to discuss as some research findings by Hornamand *et al.* (2021), Shams *et al.* (2021), Oluleye *et al.* (2020), Gabal and Hussein (2020), Ortega-Torres *et al.* (2020), Madu *et al.* (2019), Akhlaghi *et al.* (2018) proved the opposite, they showed that there was no statistical significant differences between gender and learning preferences. This may be due to variation in the demographic characteristics of the participants.

CONCLUSION

There was a significant association between age group, gender and the learning preferences of nursing students in Schools of Nursing in Anambra State.

IMPLICATIONS OF THE FINDINGS

1. Assessment of the learning preferences of the students could make valuable impact in nursing education. The knowledge may assist educators in planning teaching methods based on learning preferences as well as solve identified learning problems among students thereby promoting effective learning in them.
2. Educators can utilize the information given in this study to improve classroom setting and provide an environment that is conducive for all types of learners with varied teaching strategies.

Recommendations

Findings from this study necessitated the following recommendations:

1. Preparation of Nursing Curriculum that utilizes more active strategies to accommodate the diverse learning preferences of the students in their different age group and gender.
2. Paying close attention to the high aural and blend of Visual and Kineasthetic learning preferences of the students, applying teaching strategies of these sensory modalities in order to enhance the learning efficacy and achievement of nursing students in Anambra State.

Suggestion for Further Studies

A replication of this study considering other confounding factors such as marital status and socioeconomic status.

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