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RELATIONSHIP AMONG LEARNING STYLE, GEOGRAPHIC LOCATION AND YEAR OF STUDY OF COMMUNITY HEALTH OFFICERS TRAINEES IN UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL, RIVERS STATE

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ABSTRACT

Students learn in different ways which is affected by several factors. This study investigated the relationship between learning style, year of study and geographic location of practice of community officer trainees. This study was conducted amongst community health officer trainees undergoing the community health officer training programme at the University of Port Harcourt Teaching Hospital. The VARK learning style inventory was used. It was a census of 60 community health officer trainees. There is no relationship between learning style and the year of study F=4.054. The year one and year two trainees did not differ across three learning styles (visual, aural, and kinaesthetic learning styles) $p < 0.05$ except for the read/write learning style. The multivariate analysis shows that the learning styles (visual, aural, read/write and kinaesthetic learning styles) did not differ significantly between the year one and year two trainees. There were differences in learning styles based on the geographic location, particularly auditory and read/write preferences, kinaesthetic learning styles remain a dominant style of learning for the community health officer trainees regardless of whether they are in urban or rural settings. There is no statistical difference between urban and rural community health officer trainees.

Keywords: Correlation; Learning Style; Geographic Location; Health Officers Trainees.

Introduction

Learning involves acquiring new knowledge and skills. This aids in being current with discoveries and inventions. Various categories of health workers are involved in continuous training and professional development. This is essential for progression in their career and also to improve the healthcare practice. Health workers undergo various continuous professional development which involves short and long courses. There are different categories of health workers which include community health practitioners. According

to Ha and Yen (2019), people learn differently. Therefore, persons impacting the knowledge which are the teachers and the tutors and lecturers. Earning styles have been defined by different scholars. Hamiden (2025) defined learning style as the characteristics a person possesses by feeling and behaving in the learning situation. Garko et al (2023) defined learning style as the manner and actions which students display when they are learning and it plays an important role in the lives of students. The phrase learning style first appeared in educational literature in the 1970s (Kulturel-Konak, 2011). There are different styles of learning which include the VARK learning styles. In a study conducted by Masic (2020), there was a significant relationship between learning style and the year of study. How a student or learner decides to learn can affect their academic achievement and the outcome of learning hence it is important to investigate and study learning style (Quari and Sultan, 2017).

This study was conducted among trainees of community health officers undergoing a community health officers training programme (CHOTP) for the award of a higher national diploma in community health at the University of Port Harcourt Teaching Hospital. People learn in different ways and several factors can influence learning style (Sumitha et al, 2023). Community health practitioners work in primary health centres before such patients if necessary are referred to a secondary or tertiary health facility (WHO, 2007; Public Health Nigeria, 2020). Some of the trainees undergoing the community health officers training programme are already working before undergoing the community health officer training programme, the trainees have already been schooled at a school of health technology to become community health extension workers (CHEW) in which they are issued an ordinary diploma in community health. Holders of the ordinary national diploma in community health can be employed to work in a primary health facility or directly to undergo the community health officers training programme. Therefore, it is important to determine the relationship between learning style and the geographic location of practice of the trainee. The style of learning of a student may be affected by the year of study and the geographic location of the community health officer trainee.

The year of study and geographic location of the community health officer trainee and its relationship with the learning style of the trainee of community health officer at the University of Port Harcourt Teaching Hospital. Some of the community health officers' trainees have graduated some years before enrolling in the community health officers training programme. The geographic location of practice either in a rural or urban setting can also affect learning styles. This is because of the way the academic instruction does not match the preferred learning style of the student. The academic activity may be affected by the year of study and geographic location of practice. The educational needs and styles of learning between residents of rural and urban areas have implications that are significant for society (Wood, 2023).

The Community Health Officer Training Programme

The community health officer training programme is a two-year programme for

the training of community health practitioners (1st Joint Schools Convocation Ceremony Brochure, 2022). The training is conducted at a teaching hospital accredited by the Community Health Practitioners Registration Board of Nigeria (CHPRBN). This is the board that regulates the practice and training of community health practitioners. After undergoing the training, the community health practitioner is promoted from community health extension worker (CHEW) to community health officer (CHO). At the level of the local government area, the highest cadres of health personnel are the community health officers (Okonkwo, 2002).

This study aimed to investigate the relationship between learning style, year of study and geographic location of community health officer trainees.
There are two specific objectives of this study which are:

1. To ascertain the relationship between the learning styles and the year of study of community health officer trainees.
2. To identify the relationship between the learning styles and the geographic location of the community health officer trainees

Research Questions

The following are the research questions:

1. Are there differences in the responses between the visual, aural, read/write and kinaesthetic learning styles in relation to the year of study of community health officer trainees?
2. Are there differences in the responses between the visual, aural, read/write and kinaesthetic learning styles in relation to the geographic location of the community health officer trainees?

Two hypotheses were formulated for this study which are:

1. The community health officer trainees' responses are significantly different in their responses to VARK (visual, aural, read/write and kinaesthetic learning styles) learning styles in relation to the year of study of community health officer trainees.
2. The community health officer trainees' responses are significantly different in their responses to VARK (visual, aural, read/write and kinaesthetic learning styles) learning styles in relation to the geographic location of the community health officer trainees.

Methodology

This is a cross-sectional study conducted at the College of Community Health at the University of Teaching Hospital. Data was collected using a structured questionnaire. The questionnaire was divided into sections. Section one comprised questions related to demographics. This includes the age, sex, year of study, geographic location of practice and years of practice. Section two of the questionnaire was adopted from the VARK learning style model on a four-item Likert Scale. The responses elicited from the questionnaire were entered into an Excel sheet. This was exported into the statistical package of social sciences (SPSS) software. This was analysed using mean, standard deviation, one-way repeated measure of analysis of variance ANOVA and one-way multiple analysis of variance MANOVA. Two ethical committees approved the study, the University of Port Harcourt Teaching Hospital Ethical Committee and the University of Port Harcourt Research and Ethics Committee.

Results

This is a census of 60 respondents, forty respondents were in year two and twenty trainees in year one. The sixty questionnaires administered to these respondents were all retrieved with a 100% response. The results of this study were obtained from the statistical analysis. This includes means, standard deviations, and participant counts (N) for each learning style within different years of study. It shows that for Visual Learning Style community health officer trainees in Year One with Visual learning style were 20, (N = 20), they had a Mean of 2.7500 and a Std. Dev. of 1.44641while those in Year Two (N = 40) had a Mean of 2.5500 and a Std. Dev. of 1.9208. The mean scores for visual learning style in both year groups are relatively close, with year one having a slightly higher mean. The standard deviations indicate a moderate level of variability within each group. This data suggests that, based on the provided data, there is a slight difference in visual learning style preference between year one and year two community health officer trainees. Aural learning styles were 20, (N = 20), they had a Mean of 3.6000 and a Std. Dev. of 11.95744 while those in Year Two (N = 40) had a Mean of 4.6250 and a Std. Dev. of 2.58881. The mean score for the aural learning style is notably higher in year two compared to year one. The standard deviations indicate a moderate level of variability within each group. This suggests that community health officer trainees in year two might have a stronger preference for the aural learning style compared to those in year one.

It further shows that the Read/Write Learning Style of community health officer trainees in Year One style were 20, (N = 20), they had a Mean of 5.3000 and a Std. Dev. of 2.93975 while those in Year Two (N = 40) had a Mean of 3.0500 and a Std. Dev. of 2.05002. The mean scores for the read/write learning style are quite large between the two-year groups, with year one having a substantially higher mean. The standard deviations show a considerable level of variability within each group. This indicates a great difference in read/write learning style preference between year one and year two community health officer trainees.

It shows that Kinesthetic Learning Style had year One (N = 20) community health officer trainees having a Mean of 4.3000 and Std. Dev. of 3.04527 while Year Two (N = 40) had a Mean of 5.6250 and a Std. Dev. of 2.73334. The mean score for the kinesthetic learning style is higher in year two compared to year one. The standard deviations indicate a moderate level of variability within each group. This suggests that community health officer trainees in year two might have a slightly stronger preference for the kinaesthetic learning style compared to those in year one.

The data suggests that based on the year of study of the community health officers trainees, variations occur in terms of their preferences in the styles of learning. Year two community health officer trainees appear to show a stronger preference for aural and kinaesthetic learning styles, while year one trainees prefer to use the read/write style of learning. The visual style of learning preference doesn't seem to differ between the two-year groups.

Table 1; Mean and Standard Deviation Analysis of the difference between the aural, visual, kinaesthetic, and read/write learning styles based on the year of study of community health officer trainees

Learning Styles	Year of Study	Mean	Std. Deviation	N
	Year One	2.7500	1.44641	20
Visual	Year Two	2.5500	1.92087	40
	Total	2.6167	1.76685	60
	Year One	3.6000	1.95744	20
Aural	Year Two	4.6250	2.58881	40
	Total	4.2833	2.42928	60
	Year One	5.3000	2.93975	20
Read/Write	Year Two	3.0500	2.05002	40
	Total	3.8000	2.58942	60
	Year One	4.3000	3.04527	20
Kinaesthetic	Year Two	5.6250	2.73334	40
	Total	5.1833	2.88474	60

Table 2: Mean and Standard Deviation analysis of the difference between the visual, aural, read/write and kinaesthetic learning styles based on the geographic location of community health officers

Reading styles	Location	Mean	Std. Deviation	N
	Urban	2.6923	1.65679	39
Visual	Rural	2.5238	1.99045	21
	Total	2.6333	1.76565	60
	Urban	3.9744	2.09620	39
Audio	Rural	4.8571	2.92037	21
	Total	4.2833	2.42928	60
	Urban	4.0256	2.60048	39
Read/write	Rural	3.2381	2.38547	21
	Total	3.7500	2.53534	60
	Urban	5.2821	2.74292	39
Kinaesthetic	Rural	5.0000	3.19374	21
	Total	5.1833	2.88474	60

Table 2 shows the differences in learning styles—specifically visual, auditory, read/write, and kinaesthetic—based on the geographic location of community health officers, comparing urban and rural settings. The mean and standard deviation analyses for each learning style offer insights into how these professionals' preferences vary depending on their geographic location.

For the visual learning style, the mean score for urban community health officers is 2.6923 with a standard deviation of 1.65679, while for their rural counterparts, the mean is slightly lower at 2.5238 with a standard deviation of 1.99045. The combined mean for both groups is 2.6333, indicating that visual learning is slightly more prevalent in urban areas, though the

difference between urban and rural settings is not substantial.

In terms of auditory learning, rural community health officers have a higher mean score of 4.8571, with a larger variability as indicated by a standard deviation of 2.92037, compared to their urban counterparts, who have a mean of 3.9744 and a standard deviation of 2.09620. This suggests that auditory learning is more pronounced in rural areas, possibly due to differences in the availability of learning resources or environmental factors that make auditory learning more feasible or necessary.

For the read/write learning style, the trend reverses, with urban community health officers showing a higher mean score of 4.0256 and a standard deviation of 2.60048, while rural officers have a mean of 3.2381 and a standard deviation of 2.38547. The combined mean of 3.7500 suggests that urban officers may have better access to or a greater preference for learning through reading and writing, potentially due to better educational infrastructure and resources in urban settings.

Lastly, the kinesthetic learning style shows relatively similar mean scores between urban and rural community health officers, with urban officers having a mean of 5.2821 and a standard deviation of 2.74292, and rural officers having a mean of 5.0000 with a slightly higher standard deviation of 3.19374. The overall mean of 5.1833 indicates that kinesthetic learning is a strong preference across both settings, reflecting the hands-on nature of health-related work, which may require learning through doing rather than through other means.

The analysis generally indicates that while there are some differences in learning styles based on geographic location, particularly in auditory and read/write preferences, kinaesthetic learning remains a dominant style for community health officers regardless of whether they are in urban or rural environments.

A one-way multiple analysis of variance (MANOVA) was conducted to assess whether the means of the four learning style groups differed significantly based on the year of study. The F ratios for the univariate analysis in Table 3 show that year one and year two community officer trainees did not differ across three subscales of styles of learning styles (kinaesthetic, aural and styles of learning), significantly i.e. $p < 0,05$ except for the read/write learning style. Precisely, the computed F = .168, P >.05, i.e., p = .683, i.e., p = .683 shows that there was no statistical difference between year one and year two community health officer trainees with visual learning style. Also, the effect size of .003 was very small showing that the proportion or percentage of the variance or effect of visual learning style on year of study is small. It shows also that the computed F = .2.431, P >.05, i.e., p = .128, i.e., p = .128 which shows that there was no statistical difference between year one and year two trainees with aural learning style. Also, the effect size of .040 was very small showing that the proportion or percentage of the variance or effect of aural learning style on year of study is small. It further shows also that the computed F = 2.431, P >.05, i.e., p = .124 i.e., p = .124 shows that there was no statistical difference between

year one and year two with read/write learning style. Similarly, the effect size of .003 was very small showing that the proportion or percentage of the variance or effect of visual learning style on year of study is small. Table 3 shows that the computed F = 11.932, P <.05, i.e., p = .001, i.e., p = .001 which shows that there was a statistical difference between year one and year two trainees with read/write learning style. Also, the effect size of .171 is large showing that the proportion or percentage of the variance or effect of read/write learning style on year of study is large. It shows as well that the computed F = 2.904, P <.05, i.e., p = .094, i.e., p = .094 which shows that there was no statistical difference between year one and year two trainees with kinaesthetic learning style. Similarly, the effect size of .048 was very small showing that the proportion or percentage of the variance or effect of kinaesthetic learning style on year of study is small.

The multivariate analysis also shows that the styles of learning styles (aural, visual, kinaesthetic, and read/write styles of learning), did differ significantly between the community health officer trainees within different years of study (Year one and Year two) as seen by the Wilk's ∧=.4.054 p = .006 < .05. This implies that different year of study (Year one and Year two) does significantly makes a difference in the styles of learning (aural, visual, kinaesthetic, and read/write styles of learning) of community health officer trainees. Furthermore, the effect size of .228 was large showing that the proportion or percentage of the variance or effect of the four learning styles on year of study is large.

Table 3; One-Way MANOVA Analysis of the difference between the aural, visual, kinaesthetic, and read/write learning styles based on the year of study of community health officer trainees

		Univariate Test						Multivariate Test (Wilks's Lambda)				
Source	**Learning styles**	**Type III Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig**	**Partial Eta Square**	**Value**	**F**	**Df**	**Sig**	**Partial Eta Square**
Year Of Study	Visual	.533	1	.533	.168	.683	.003	.772	4.054	4,55	.006	.228
	Aural	14.008	1	14.008	2.431	.124	.040					
	Read/Write	67.500	1	67.500	11.932	.001	.171					
	Kinaesthetic	23.408	1	23.408	2.904	.094	.048					

Table 4; One-way MANOVA analysis of the difference between the visual, aural, read/write and kinesthetic learning styles based on the location of study of community health officers

Univariate analysis								**Multivariate analysis (wilks lambda)**				
Source	**Learning styles**	**Type iii sum of squares**	**Df**	**Mean square**	**F**	**Sig**	**Partial eta square**	**Value**	**F**	**Df**	**Sig**	**Partial eta square**
Location	Visual	.388	1	.388	.122	.728	.002	.854	2.523	4,55	.051	.155
	Aural	10.638	1	10.638	1.828	.182	.031					
	Read/write	8.466	1	8.466	1.324	.255	.022					
	Kinaesthetic	1.086	1	1.086	.129	.721	.002					

Multiple analysis of variance (MANOVA) was conducted to assess whether the means of the four learning style groups differed significantly based on geographic location. The f ratios for the univariate analysis in Table 4 show that urban and rural community health officer trainees did not differ across the four learning styles (visual, audio, read/write and kinaesthetic learning styles), significantly i.e. p < 0,05. Precisely the computed f = .122, p >.05, i.e., p = .728, i.e., p = .728 shows that there was no statistical difference between urban and rural health officers with visual learning style. Also, the effect size of .002 was very small showing that the proportion or percentage of the variance or effect of visual learning style on geographic location is small. It shows also that computed f = .1.828, p >.05, i.e., p = .182 i.e., p = .182 revealed that there was no statistical difference between urban and rural health officers with aural learning style. Also, the effect size of .031 was very small showing that the proportion or percentage of the variance or effect of aural learning style on geographic location is small. It further shows also that the computed f = .1.324, p >.05, i.e., p = .255 i.e., p = .255 shows that there was no statistical difference between urban and rural health officers with read/write learning style. Also, the effect size of .022 was very small showing that the proportion or percentage of the variance or effect of read/write style on geographic location is small. It shows as well that the computed f = 129, p >.05, i.e., p = .721, i.e., p = .721 which shows that there was no statistical difference between urban and rural health officers with kinaesthetic learning style. Also, the effect size of .002 was very small showing that the proportion or percentage of the variance or effect of kinaesthetic learning style on geographic location is small.

The multivariate analysis also shows that the learning styles (visual, audio, read/write and kinaesthetic learning styles), did not differ significantly between urban and rural locations as seen by the wilk's^= 2.523, p = .051>.05. Furthermore, the effect size of .155 was not large showing that the proportion or percentage of the variance or effect of the four learning styles on geographic location is small. This implies that the geographic location (urban or rural) does not significantly make a difference in the learning styles (visual, audio, read/write and kinaesthetic learning styles) preference of community health officer trainees.

Discussion

Learning is an individualization process, different educational and background experiences personality traits, levels of motivation and numerous other variables affect the way persons learn which can be affected by their year of study and geographic location. The process and concept of learning can be affected by the setting where the learner resides (Quari and Sultan, 2017). Learning In urban areas, there are more buildings, modernization, and industrialization and densely populated compared to the rural areas which are characterised by a sparse population and less educational and technological gadgets (Wood, 2023). This can affect the trainees' learning style hence it was not surprising that there was a preference for the visual learning style by the trainees residing in urban areas. The differences between urban and rural areas can affect education and

learning (Wood, 2023). However, this is not the case in this study as there was no relationship between the community health officer trainees residing in rural areas and those residing in urban areas. The results of this study in contrast to the survey by Quari and Sultan (2017) were there was a relationship between the learning styles of students' resident in rural areas and students residing in urban areas. The results of this study are similar to the survey by Bayrak (2012) in which there is no relationship between learning style and the year of study.

The findings of the study showed that there was no difference between year one and year two community health officer trainees across three subscales of the styles of learning, these are aural, visual, and kinesthetic styles of learning. There was no statistical difference between the year of study and the read/write style of learning. This agrees with the study by Nja et al (2019) where there was year of study of respondents was affected by their learning style and also the study by Gebru al (2015) where there is a significant relationship between learning style and the year of study.

Conclusion

There are different styles of learning and learners use diverse methods. This study investigated the relationship between lea ring style, geographic location of practice and the year of study of community health officer trainees undergoing the community health officer training programme at the University of Port Harcourt Teaching Hospital. The VARK learning style model was used in assessing the learning styles of the community health officer trainees. The analysis of the result revealed that there was no relationship between the learning style and the year of study of the community health officer trainees. The geographic location of the community health officer trainees did not significantly make a difference in the preferred learning style of the community health officer trainees.

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