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Healthcare Simulation as a Platform for Interprofessional Education in Health and Applied Sciences: A Descriptive Study of Undergraduate Health Educator's Attitude

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Abstract: In health and applied sciences, Healthcare Simulation-HCS has remained a platform for interprofessional development of the prospective professionals. This is because HCS uses a situation that allows students to explore and experience a representation of a real healthcare event for the purpose of practice, learning, evaluation, testing and gaining a deeper understanding of the systems or human actions. This study aimed to determine the attitude of undergraduate health educators-UHEs towards HCS as a platform for interprofessional education-IPE in health and applied sciences in universities. Using descriptive research design, a sample size of 300 UHEs was properly selected and used for the study. The result showed that the attitude of UHE towards HCS as a platform for IPE in health and applied sciences in universities was encouraging. Statistically, the study indicated significant differences within demographic variables of the respondents regarding attitude towards HCS. It was therefore concluded that the student's positive attitudes towards the phenomenon should be enhanced and sustained for effective interprofessional development and quality healthcare services delivery.

Key words: Attitude, healthcare simulation, interprofessional education, applied sciences, undergraduates, delivery

INTRODUCTION

Healthcare simulation is a technique that uses a situation or environment created to allow students to experience a representation of a real healthcare event for the purpose of practice, learning, evaluation, testing or to gain understanding of systems or human actions. It is the application of a simulator to training, assessment, research or systems integration toward patient safety (CAHSP., 2012). Simulation scholar recognized HCS as an effective and advanced method that transcends limitations identified in traditional education (Billings and Halstead, 2009). As a tool for structuring and standardizing the educational process, the successful application of HCS allows the students to acquire skills needed for interprofessional development and practice. However, Schoenbaum emphasized that the obvious challenge would be to use HCS as effectively and efficiently as possible and also to have a defined attitude.

Interprofessional education is an initiative designed to secure interprofessional learning and promote gains through interprofessional collaboration in professional practice (Koppel *et al*., 2005). In health, education and applied sciences, research indicates that IPE describes those occasions when two or more professions learn with from and about each other to improve collaboration, the quality of care (CAIE., 2005) and effective service delivery. As a tool, IPE is used in achieving a set of competencies needed for collaboration, excellent care and ultimately better outcomes. This supports previous studies which indicate that a single professional cannot have the expertise to adequately and effectively meet the complexity of healthcare needs of individuals (Hammick *et al*., 2005). Researches further indicate that simulation training has improved student's technical and clinical skills (Small *et al*., 1999; Marshall *et al*., 2001; Lighthall *et al*., 2003; Comer, 2005; Feingold *et al*., 2004; Peteani, 2004; Seropian *et al*., 2004; Spunt *et al*., 2004; Henneman and Cunningham, 2005; Featherstone *et al*., 2005; Issenberg *et al*., 2005; Larew *et al*., 2006). The importance of IPE in interprofessional development of prospective professionals was highly recognized (ACPE., 2012). To be more specific, IPE establishes a common ground for interprofessional practice (Morey *et al*., 2002) and recognizes the need for continuous, coordinated care by teams of healthcare providers working collaboratively to ensure that care is safe, seamless and conforms to the highest possible standards (IECEP., 2011; Oandasan and Reeves, 2005; Clark, 2009).

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Given that HCS is a platform for IPE that attracts outstanding benefits to young professionals, data justifying the attitude of the students especially the UHEs in this regard are lacking. Such lack on the status of attitude towards HCS may hinder the prospective professionals from gaining a deeper understanding of the interprofessional skills and competences needed for their professional development. It may also be an impediment to student's active participation in HCS. Contextually, attitude is a set of affective reactions towards an object that predisposes the individual to behave in a certain manner towards the attitude object (Ajala *et al*., 2002). It then follows that the quality of attitude of UHEs is judged from the observable evaluative responses they tend to make in this case towards HCS. Attitudes, however have the tendency to influence performances, quality of services, self-efficacy and commitment to engage in activities. To our knowledge, no study of this nature from Nigeria exists, thus, making the current research the first descriptive survey of this kind. The UHEs were chosen for the present study due to the broad nature of their academic programme. It is our core expectation that the outcome of this study would inform other researchers and educational organizations given encouraging attitude towards HCS, the increasing adoption of IPE initiatives in health and applied sciences and the continual restructuring of educational curricular with IPE and development as major concerns.

Aim: To determine the attitude of undergraduate health educators towards healthcare simulation as a platform for interprofessional education in health and applied sciences in universities. Specifically, the study provided answers to the following research questions and null hypotheses.

- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities?
- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on gender?
- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on student year level?
- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities according to prior simulation experience?
- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on the university type?
- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on prior experience in teamwork?
- What is the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on type of teamwork experience?

Hypothesis: The following null hypothesis guided the study and were tested at 0.05 level of significance:

- H_1: there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on gender
- H_2: there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on student year level
- H_3: there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities according to prior simulation experience
- H_4: there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on the university type
- H_5: there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on prior experience in teamwork
- H_6: there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on type of teamwork experience

MATERIALS AND METHODS

The descriptive research design was employed to study 300 UHEs currently on academic program in universities of Nigeria. A simple random technique by balloting was used to select 15 UHE from 20 universities in Nigeria. Prior to the study, the eligibility of the participants was established. Only the regular UHEs were considered eligible while those on part-time or sandwich programme were considered not eligible. The UHEs who met the established criteria were used to achieve the purpose to the study.

Instrument for data collection: The instrument for the data collection was questionnaire titled "Attitude towards Healthcare Simulation Questionnaire (AHSQ)". The questionnaire was designed specifically for the study based on extensive literature review. The self-administered AHSQ which can be completed in approximately ten minutes was composed of two parts A and B. The part A contained data on demographic characteristics of the respondents while part B elicited data on the attitude towards HCS as a platform for IPE in

health and applied sciences in universities. For the convenience of the participants, the two parts A and B of the questionnaire were bundled into one study package. The AHSQ was a 4-point response options that range from 4 = strongly agree, 3 = agree, 2 = disagree and 1= strongly disagree. Reliability testing indicated that the questionnaire had a strong internal consistency (Cronbach's α = 0.76). The questions were designed allowing responses from the respondents without any bias.

Data collection procedure: In order to ensure successful distribution and return of the questionnaire from the participants, three research assistants were recruited and briefly trained on the modalities for data collection procedure. With the permission from the heads of department of the sampled universities, the researchers obtained the lecture time-table which showcased the time and venue for student's lectures. The lecture time-table was instrumental in guiding the research assistants in approaching the students towards the end of their lectures and from different year levels (i.e., 1st-4th). The eligible participants based on already established criteria, received a brief description of the study and were equally requested to participate. The UHEs who agreed to participate received a questionnaire package which included a cover letter containing summary of the study, the participant's right and the researcher's contact information. The participants completed the questionnaire and returned it on the spot. Before the administration of the questionnaire, informed consent of the participants was duly obtained. Only those who consented to participate in the study were used. The ethical approval for the study was obtained from the Faculty of Education Research Grants Committee, University of Nigeria, Nsukka. The study was free from all forms of physical, psychological, social and economic harm or risk because the data collection process primarily relied on a descriptive non-invasive questionnaire.

Statistical techniques: The returned copies of the questionnaire were arranged and coded in statistical software (Statistical Package for Social Science (SPSS) Version 21) for quantitative data analysis. The descriptive statistics involving mean score, Standard Deviation (SD), Frequency (F) and percentages (%) were used to describe the participant's characteristics and answer the research questions. The criterion mean score of 2.50 accrued from the 4-point response options was used, hence, any item that weighed 2.50 and above implies positive attitude while any item <2.50 signifies negative attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities. One-way Analysis of Variance (ANOVA) and t-test statistics were used to test the postulated null hypothesis of no significant differences at 0.05 level of significance. The hypothesis ought to be accepted when the p-value is below 0.05 while when the p-value is 0.05 and above, the hypothesis was rejected.

RESULTS AND DISCUSSION

A total of 300 UHEs were studied. Table 1 presents the demographic characteristics of the participants. Of all the participants, only 43% were males while 57% were females. Based on student year level, 23% were in their 1st year level, 27% 2nd year level, 22% 3rd year level and 27% 4th year level. About 63% had prior simulation experience while only 37% never had simulation experience. A total of 70% were in public (i.e., government-owned) universities while only 30% were in private universities. A greater percentage of the participants 87% had prior experience in teamwork while only 13% never had prior experience in teamwork. Only 7 and 20% of the participants indicated workshop and seminar as type of teamwork experience while 40 and 33% indicated lecture and conference as the type of teamwork experiences they had respectively (Table 1).

Available data in Table 2 indicated that the average mean value (M = 2.67, SD = 0.020>2.50) is above the criterion mean score, indicating that the attitude of UHEs towards UHEs as a platform for IPE in health and applied sciences in universities is positive. This encouraging result implies that the UHEs have favourable disposition towards HCS as a platform for IPE in health and applied sciences (Table 2).

Table 1: Demographic characteristics of undergraduate health educators (N = 300)

Variables	Frequency	Percentage
Gender		
Male	130	43
Femae	170	57
Student year level		
First	70	23
Second	80	27
Third	70	23
Fourth	80	27
Prior simulation experience		
Yes	190	63
No	110	37
University types		
Public	210	70
Private	90	30
Prior experience in teamwork		
Yes	260	87
No	40	13
Types of teamwork experience		
Workshop	20	7
Seminar	60	20
Lecture	120	40
Conference	100	33

Table 2: Showing the attitude of UHE towards healthcare simulation as a platform for interprofessional education and sciences in universities (N = 300)

Attitude	Mean	SD	Remark
Average mean value	2.67	0.020	Positive

Table 3: demographic differences on attitude of UHE towards healthcare simulation and significant differences within variables (N = 300)

Variables	F-values	Mean	SD	Status	t-Cal	p-values	Remarks	Decision
Gender					0.18	0.04	**	Accepted
Male	130	2.35	0.101	Negative				
Female	170	2.65	0.011	Positive				
Student year level					0.62	0.32	**	Accepted
First	70	2.19	0.021	Negative				
Second	80	2.81	0.104	Positive				
Third	70	2.23	0.091	Negative				
Fourth	80	2.77	0.050	Positive				
Prior simulation experience					0.13	0.02	**	Accepted
Yes	190	2.82	0.001	Positive				
No	110	2.18	0.201	Negative				
University types					0.81	0.64	*	Rejected
Public	210	2.64	0.020	Positive				
Private	90	2.36	0.019	Negative				
Prior experience in teamwork					0.40	0.02	**	Accepted
Yes	260	2.77	0.001	Positive				
No	40	2.23	0.101	Negative				
Types of teamwork experience					0.05	0.43	**	Accepted
Workshop	20	2.16	0.051	Negative				
Seminar	60	2.84	0.012	Positive				
Lecture	120	2.63	0.041	Positive				
Conference	100	2.74	0.021	Positive				

*Significant at 0.05 level; **Not significant at 0.05 level; F = Frequency; SD = Standard Deviation

The study indicated that the average mean score of female UHE (M = 2.65, SD = 0.011>2.50) is above the criterion mean implying positive attitude while their male counterparts (M = 2.35, SD = 0.101<3.00) is below the criterion mean value indicating negative attitude towards HCS as a platform for IPE in health and applied sciences in universities (Table 3). The table further showed that H_{01} is accepted, since, the p-value of 0.04 is <0.05. That is to say that, there is no significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on gender.

Available data in Table 3 showed the average mean values of UHEs in 1st year (M = 2.19, SD = 0.021<2.50); 2nd year (M = 2.81, SD = 0.104>2.50), 3rd year (M = 2.23, SD = 0.091<2.50) and 4th year (M = 2.77, SD = 0.050 > 2.50), respectively. As contained in the table, the average mean values of UHE in 2nd year and 4th year were above the criterion mean score, indicating positive attitude while the average mean values of UHEs in 1st year and 3rd year levels were below the criterion mean score implying negative attitude towards HCS as a platform for IPE in health and applied sciences in universities. The table also showed that H_{02} is accepted, since, the p-value of 0.32 is <0.05. That is to say that, there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on student year level.

The result indicated that UHEs who had prior simulation experience had average mean value (M = 2.82, SD = 0.001>2.50) indicating positive attitude while those who never had prior simulation experience had average mean value (M = 2.18, SD = 0.201<2.50) signifying negative attitude towards HCS as a platform for IPE in health and applied sciences in universities (Table 3). The table also showed that H_{03} is accepted, since, the p-value of 0.02<0.05. That is to say that statistically, there is no significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on prior simulation experience.

Available data indicated that the average mean value of UHEs in public universities (M = 2.64, SD = 0.020>2.50) is above the criterion mean score implying positive attitude while those in private universities (M = 2.36, SD = 0.019<2.50) is below signifying negative attitude towards HCS as a platform for IPE in health and applied sciences in universities (Table 3). The table further indicated that H_{04} is rejected, since, the p-value of 0.64>0.05. That is to say that, statistically, there is significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on university type.

Available data indicated that the UHEs who have prior experience in teamwork had average mean value (M = 2.77, SD = 0.001>2.50) indicating positive attitude while those who never had prior experience in teamwork had average mean value (M = 2.23, SD = 0.101<2.50) signifying negative attitude towards HCS as a platform for IPE in health and applied sciences in universities (Table 3). The table also showed that H_{05} is accepted, since, the p-value of 0.02<0.05. That is to say that statistically, there is no significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on prior experience in teamwork.

The study indicated that the average mean values of UHEs who had experience in seminar (M = 2.84, SD = 0.012>2.50), lecture (M = 2.63, SD = 0.041>2.50) and conference (M = 2.74, SD = 0.021>2.50) are above the criterion mean score implying positive attitude while those who had experience in workshop (M = 2.16, SD = 0.051<2.50) is below the criterion mean score indicating negative attitude towards HCS as a platform for IPE in health and applied sciences in universities (Table 3). The table further showed that H_{06} is accepted, since, the p-value of 0.43<0.05. That is to say that, there is no statistically significant difference on the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities based on type of teamwork experience.

The present study indicated that the attitude of UHEs towards HCS as a platform for IPE in health and applied sciences in universities is positive. This finding is not surprising and could be attributed to the fact that most of the participants surveyed were females had prior simulation experience in public universities and had prior experience in teamwork. This finding is quite encouraging with obvious implications. First, the UHEs who had prior simulation experiences must have acquired vast experiences regarding HCS and so could play significant roles in defining their personal attitude and dispositions towards HCS as a platform for IPE in health and applied sciences. This finding could also be attributed to the fact that the UHEs have quality understanding that a single professional cannot have the expertise to adequately and effectively meet the complexity of healthcare needs of individuals (CAIPE, 2007; Hammick *et al*., 2005). In addition, it is obvious that the UHEs prior simulation experiences have contributed immensely in gaining a deeper understanding of the aim of IPE which is to secure interprofessional learning and promote gains through interprofessional collaboration in professional practice (Koppel *et al*., 2005). The UHEs in public universities are usually exposed to learning experiences using a definite standard unlike their counterparts in private universities. The uniqueness of their course programme and interprofessional ethics might have aided in defining their attitudinal disposition towards HCS. Furthermore, the administrative structure and institution experiences could trigger a unique attitude towards HCS as a platform for IPE in health and applied sciences. About 87% of the participants had prior experience in teamwork. This is quite encouraging, since, experiences of this kind usually play outstanding roles in building one's attitude towards attitude object (healthcare simulation in this regard). Positive attitude towards simulation is associated with high-fidelity simulation (Lasater, 2007; Sanford, 2010); quality knowledge (Peisachovich *et al*., 2016), high self-efficacy, knowledge acquisition and performance (Kaakinen and Arwood, 2009; Norman, 2012).

This study revealed that differences exist within demographic variables of the participants in relation to attitude towards HCS as a platform for IPE in health and applied sciences. The result indicated that female UHEs, those in 2nd year level and 4th year level, UHEs who had prior simulation experience, those in public universities, UHEs who had prior experience in teamwork and UHEs who had teamwork experience in seminar, lecture and conference had positive attitude towards HCS as a platform for IPE in health and applied sciences in universities. The study also showed that the male UHEs, those in 1st and 3rd year levels, UHEs who had no prior simulation experience, those in private universities, UHEs who had no prior experience in teamwork and those who had teamwork experience in workshop had negative attitude towards HCS as a platform for IPE in health and applied sciences. These expected findings aligned with the findings of other researchers that attitude of individual on a given phenomenon can be affected by demographic variables (Sigalet *et al*., 2012; Uchenna *et al*., 2016; Gharaibeh *et al*., 2017). Statistically, the study indicated that no significant difference existed on the variables of gender, student year level, prior experience in teamwork, type of teamwork experience and prior simulation experience while differences existed on the university type.

The strength and limitations of the present study lies on the chosen methodology. This study was a descriptive research design adopting descriptive statistics. A more detailed qualitative in-depth survey should be conduct to provide a deeper understanding and finding regarding attitude towards HCS as a platform for IPE in health and applied sciences. Only few variables such as gender, student year level, prior simulation experience, university type, prior experience in teamwork and type of teamwork experience were verified against the phenomenon. There is need to conduct further researches to include others such as age and marital status, for broader research generalization. The present study was delimited to UHEs in universities. It is important to expand the scope by conducting similar study to involve other students from other disciplines.

CONCLUSION

This descriptive study in its modest attempt has shown the attitudinal disposition of UHEs towards HCS as a platform for IPE in health and applied sciences in universities. Statistically, the study indicated demographic variations on the attitude of the participants towards the phenomenon.

SUGGESTIONS

This suggests that the student's positive attitudes towards the phenomenon should be upgraded, enhanced and sustained for effective interprofessional development and quality healthcare services delivery. In addition, the lecturers should encourage the student's engagement in HCS through group assignments, seminar presentations, workshops and lectures.

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