

Full Length Research Paper

An evaluation of the efficiency of Nursing Students of Omar Al-Mukhtar University, Libya

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The physical assessment self-efficacy of 73 BS Nursing students of Omar Al-Mukhtar University (Libya) was evaluated following a nine-day training on cephalocaudal examination using a self-assessment tool that was constructed by the authors (Cronbach's $\alpha = 0.972$). A comparative descriptive design was employed. This study was undertaken to determine self-efficacy variability among different year levels, student ranks and areas of specialization. The study revealed an over-all high level of self-efficacy in performing this essential nursing skill. Although variability was noted in performing specific steps, no significant differences were found in all the three variables examined. This research provided valuable information that was used by faculty in enhancing instruction for specific groups of students and for specific aspects of adult physical assessment.

Keywords: Self-efficacy, physical assessment, nursing process, clinical instruction, nursing education.

INTRODUCTION

Health Assessment is fundamental to all procedures that a patient may undergo (Workman and Bennet, 2003). Health assessment is considered as the first step of the nursing process - a planned, problem-solving approach to meeting a patient's health care and nursing needs (Nettina and Mills, 2006). Secrest et al. (2005) suggest that all nurses must be able to detect alterations in the status of their patients to provide the appropriate nursing care. Health assessment consists of health history assessment followed by physical assessment (physical examination).

Physical assessment is a nursing duty that requires psychomotor skill acquisition. It includes a sequence of data collection using inspection, palpation, percussion

and auscultation employing nurses' core senses of sight, hearing, smell and touch (Baid, 2006).

Albert Bandura defines self-efficacy beliefs as the belief a person has about his or her capabilities to produce the desired level of performance (Bandura, 1997). It pertains to the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Bandura, 1995). He posited that self-efficacy beliefs are formed by how individuals interpret the input they receive through four sources: the person's own mastery experiences, vicarious experience of observing others perform tasks, social persuasions, and somatic and emotional states.

In nursing, for instance, there is a lot of learning to be accomplished, including didactic knowledge and clinical skills. How students subjectively perceive their ability to master all this, is often met with fear and frustration, thus decreasing their academic success (Rowbotham and Schmitz, 2013).

Abbreviations: IEN - Intensive and Emergency Nursing; MNN - Midwifery and Neonatal Nursing; PHN - Public Health Nursing; OTAN - Operating Theater and Anesthesia Nursing.

It was the authors' interest to determine psychomotor skill acquisition by the students for physical assessment following the training conducted by the nursing faculty. As defined, self-efficacy is the belief in one's ability to take actions to manage a future situation (Bandura, 1995).

Although self-efficacy is often considered in an academic context it can include performance of psychomotor tasks as well (Stump, Husman and Brem, 2012). In nursing, self-efficacy has been used as an estimate of abilities or competence to perform certain nursing skills such as in the studies of Stump, Husman, and Brem (2012); Clark et al. (2004); Cheraghi, et al (2009); Rowbotham and Schmitz (2013).

Cheraghi et al. (2009) reported that accurate measurement of self-efficacy can be used to predict nursing students' clinical performance. Insights on self-efficacy have been found to assist course leaders in tailoring the course structure and teaching strategies to better meet students' educational and practice needs (Clark et al., 2004).

Nursing students' self-reflection of professional behaviors, clinical knowledge, and skill performance is important because it reflects nursing students' present clinical competence and leads to greater clinical confidence in the future (Raines and Lynn, 2010). The students' sense of professional confidence and success in their first employment rely on how well they learn to practice skills before graduation (Brown et al., 2003; Kim, 2007). Moreover, self-efficacy for the ability to perform patient care is vital for nurses in that it may be required even to initiate performance (Stump et al., 2012).

Prior to the start of the second semester of AY 2013-2014, the College of Nursing of Omar Al-Mukhtar University (Libya) conducted a 9-day training course on Physical Assessment of Adult Clients for 3rd and 4th year nursing students. The training was conducted to provide students with knowledge and skills in performing head-to-toe examination of adult patients.

The course consisted of three phases: lecture-demonstration of skills on cephalocaudal assessment, followed by supervised hands-on practice and finally by return demonstration performed by students.

This training was preceded by microteaching sessions for Faculty Members with twofold objectives. First, to develop a standard Physical Assessment tool to be used by students based on commonly used reference materials. Secondly, to permit enhancement of the faculty members' personal knowledge and skills on Physical Assessment.

All educational activity demands evaluation (Herbener and Watson 1992). It was the objective of this study to assess the self-efficacy of BSN students to perform physical assessment on actual patients following the training. Indirectly, this study measures the effectiveness of the strategies utilized in the training on physical assessment. The authors intended that the result of this

study be used in identifying areas where students require further guidance during their clinical exposure.

METHODS

A descriptive non-experimental design was employed in this research. Convenience sampling was conducted among the third and fourth year students of the College of Nursing who participated in the 9-day training course on Adult Physical Assessment. Data was collected from February to March 2014 at Omar Al-Mukhtar University College of Nursing in Tobruq, Libya. Respondents were asked to rate their efficacy on 14 components of Adult Physical Assessment: general appearance, skin, nail, hair, skull and face, eyes, ears, nose and sinuses, mouth and oropharynx, neck, 3thorax and lungs, heart and peripheral pulses, breast and axilla, abdomen, and musculoskeletal system. The two-part research tool prepared by the researchers was first subjected to content validation and reliability testing (Cronbach's $\alpha = 0.972$). For the first part, participants were required to provide information on their year level and areas of specialization. The students' ranks were based on their Grade Point Average (GPA) obtained from the records of the College Registrar. The second part of the tool consisted of 79 physical assessment steps based on the Physical Assessment tool utilized during the lecture-demonstration and return demonstration for the students. Collected data were tallied and subsequently subjected to statistical treatment using the *Statistical Package for Social Sciences Version 16.0 (SPSS)* employing t-test for equality of means for the demographic variable of year level and one-way analysis of variance (ANOVA) for rank and areas of specialization.

RESULTS

Profile of the Respondents

The respondents consisted of 73 students, 44 (60.3%) of which are on their 3rd year of nursing studies while the remaining 29 are fourth year nursing students. Based on their GPA, majority (31, 42.5%) are of the ranked Passed while those rated Good, Very Good, and Excellent had corresponding frequencies and percentages of 23 (31.5%), 15 (20.5%), and 4 (5.5%), respectively. Nursing students of Omar Al-Mukhtar University College of Nursing choose from four areas of specialization beginning on their junior year of study. The students who participated in this study consisted of 21 (28.8%) from Intensive and Emergency Nursing (IEN), 12 (16.4%) from Midwifery and Neonatal Nursing (MNN); 16 (21.96%) from Public Health Nursing (PHN); and 24 (32.9%) from Operating Theater and Anesthesia Nursing (OTAN).

Physical Assessment Self-Efficacy of BSN Students

In general, the over-all level of self-efficacy was high with mean of 7.96 out of 10. From Table 1, it can be seen that the 3rd year and 4th year students included in the study had very high level of self-efficacy in performing assessment in the skin (8.77), nail (8.23), the hair, skull and face (8.29), ear (8.31), mouth and oropharynx (8.06), neck (8.05), breast and axilla (8.52), abdomen (8.48), muscle, bones and joints (8.32). On the other hand, the level of self-efficacy of these students was high when assessing the general appearance (7.89), the eyes (7.48), nose and sinuses (7.80), thorax and lungs (7.39), and the heart and peripheral pulses (7.34).

Differences in Physical Assessment Self-Efficacy by Profile Variable

Year Level: In general, the over-all difference in the physical assessment self-efficacy in terms of the year level is insignificant with t value of -1.948 and $p = 0.055$.

As seen in Table 2, significant differences were observed in the level of self-efficacy among 3rd year and 4th year students in performing physical assessment in areas of the Hair, Skull and Face (t value: -2.430, $p = 0.018$), the Eyes (t value: -2.318, $p = 0.023$), Nose and Sinuses (t value: -2.419, $p = 0.018$), and Thorax and Lungs (t value: -2.898, $p = 0.005$).

On the other hand, the differences in physical assessment self-efficacy level were insignificant in general appearance (t value: -1.946; $p = 0.056$), skin, nail, ears, mouth and oropharynx, neck, heart and peripheral pulses, breast and axilla, abdomen, and musculoskeletal areas.

Rank: From Table 3, it can be seen that there were no significant differences in the physical assessment self-efficacy of students based on their academic ranks (F-value: 0.258; $p = 0.855$). However, further test (post hoc) showed a significant difference in physical assessment self-efficacy level in a specific question pertaining to the palpation of the skin for presence of edema with F value of 3.277 and significance value (p) of 0.026.

Area of Specialization: The difference in physical assessment self-efficacy of students from the four areas of specialization was insignificant ($F = 1.593$, $p = 0.199$). However, significant differences were noted in certain aspects of physical assessment areas particularly, Hair, Skull and Face (F-value: 3.101; $p = 0.032$) and the Ears (F-value: 2.924; $p = 0.04$).

It can be noted that respondents belonging to MNN department have the highest mean for physical assessment area Hair, Skull and Face (9.21) compared to the other three departments. Meanwhile, the respondents from PHN department have the highest mean in performing physical assessment area of ears (9.20).

Further tests (post hoc) revealed significant differences with specific questions under the Hair, Skull and Face area. There was a significant difference in self-efficacy level between students under IEN and PHN when performing inspection of the scalp for lesions and infestations (F value: 4.313; $p = 0.008$). Likewise, there was a significant difference between IEN and MNN students when inspecting the symmetry of facial features (F value: 3.485; $p = 0.02$). Furthermore, palpation of hair texture showed significant difference (F value: 3.128; $p = 0.031$) among the four areas of specialization.

Under the examination of the Eyes, specific questions pertaining to Inspection of eyelids (F value: 4.047; $p = 0.01$) and Inspection of the pupils (F value: 3.397; $p = 0.023$) showed significant differences between IEN and MNN students. Similarly, there was a significant difference among the students of the four areas of specialization when testing for near vision (F value: 3.288; $p = 0.026$).

Under the examination of the ear, there was a significant difference in the level of self-efficacy between IEN and PHN students when performing the Whisper test (F value: 3.93; $p = 0.012$) and Rinne test (F value: 3.452; $p = 0.021$). Further, there was also a significant difference in the self-efficacy level among the students from the four areas of specialization when performing the Watch Tick test (F value: 3.212; $p = 0.028$).

Under the examination of the Thorax and Lungs, there was significant difference in performing the percussion of the thorax (F value: 3.138; $p = 0.031$) among the students of the four areas of specialization.

DISCUSSION

This study revealed that junior and senior nursing students of Omar Al-Mukhtar University College of Nursing had high level of self-efficacy on performing physical assessment in the immediate period following the training conducted by the nursing faculty.

Researchers have established that self-efficacy, behavior changes and outcomes are highly correlated. Self-efficacy is an excellent predictor of behavior, especially in psychology and education (Graham and Weiner, 1996). Bandura (1997) has shown that when students believe that they are capable of doing a task, they will exert maximal effort and persist despite failure. The fact that the nursing students of this university had high level of self-efficacy in performing physical assessment therefore offers advantages as they would persist in performing physical assessment even when frequently corrected by clinical instructors until they become highly skillful and achieve competence. This similarly implies that the nursing students would not hesitate performing this nursing skill as students and would continue to do so when they engage in professional practice.

Table 1. Level of Self-Efficacy of BSN Students on Physical Assessment

Physical Assessment Area	Mean	Standard Deviation	Adjectival Rating
General Appearance	7.89	2.31	High
Skin	8.77	2.00	Very High
Nail	8.23	2.29	Very High
Hair, skull, and face	8.29	2.10	Very High
Eyes	7.48	2.09	High
Ear	8.31	2.28	Very High
Nose and Sinuses	7.80	2.44	High
Mouth and oropharynx	8.06	2.43	Very High
Neck	8.05	2.46	Very High
Thorax and Lungs	7.39	2.48	High
Heart and peripheral pulses	7.34	2.72	High
Breast and axilla	8.52	2.23	Very High
Abdomen	8.48	2.18	Very High
Muscle, bones and joints	8.32	2.26	Very High
Over-all Level of Efficacy	7.96	1.93	High

Very low = 0.0 -2.00; Low =2.01-5.00; High 5.01 - 8.00; Very High = 8.01 - 10.0

Table 2. Differences in Physical Assessment Self-Efficacy by Year Level

Physical Assessment Area	Year Level	Mean	Standard Deviation	t value	P
General Appearance	3rd	7.33	2.37	-1.946	0.056
	4th	8.39	2.09		
Skin	3rd	8.60	1.87	-0.934	0.354
	4th	9.04	2.19		
Nail	3rd	7.86	2.33	-1.687	0.096
	4th	8.78	2.15		
Hair, Skull and Face	3rd	7.83	1.97	-2.430	0.018
	4th	9.01	2.11		
Eyes	3rd	7.04	1.97	-2.318	0.023
	4th	8.16	2.12		
Ears	3rd	7.98	2.27	-1.552	0.125
	4th	8.82	2.24		
Nose and Sinuses	3rd	7.26	2.47	-2.419	0.018
	4th	8.62	2.17		
Mouth and Oropharynx	3rd	7.70	2.57	-1.581	0.118
	4th	8.61	2.12		
Neck	3rd	7.68	2.54	-1.581	0.118
	4th	8.60	2.26		
Thorax and Lungs	3rd	6.73	2.50	-2.898	0.005
	4th	8.37	2.13		

Table 2 cont.

Heart and Peripheral Pulses	3rd	7.35	2.43	0.044	0.965
	4th	7.33	3.16		
Breast and Axilla	3rd	8.35	2.20	-0.834	0.407
	4th	8.79	2.30		
Abdomen	3rd	8.27	2.15	-1.042	0.301
	4th	8.81	2.22		
Musculoskeletal System	3rd	8.04	2.27	-1.277	0.206
	4th	8.73	2.23		
Level of Self-Efficacy	3rd	7.61	1.80	-1.948	0.055
	4th	8.49	2.03		

Table 3. Difference in Physical Assessment Self-Efficacy of Nursing Students

Profile Variable	Rank	Mean	Standard Deviation	F - value	P
Rank	Passed	7.75	2.51	0.258	0.855
	Good	8.18	1.25		
	Very Good	7.96	1.69		
	Excellent	8.35	0.83		
Area of Specialization	IEN	7.34	1.89	1.593	0.199
	MNN	8.81	1.47		
	PHN	8.17	1.39		
	OTAN	7.94	2.34		

Areas of Specialization in the Omar Al-Mukhtar University College of Nursing: Intensive and Emergency Nursing (IEN); Midwifery and Neonatal Nursing (MNN); Public Health Nursing (PHN); Operating Theater and Anesthesia Nursing (OTAN)

In providing nursing care to patients, self-efficacy for the ability to perform patient care is vital for nurses in that it may be required even to initiate performance. The advantages of greater self-efficacy include higher motivation in the face of obstacles and better chances of persisting over time outside a situation of formal supervision. Students' perceptions of self-efficacy have been found to influence their decisions about the choice of activity in which they engage, their emotional responses (e.g., stress and anxiety) when performing the behaviors, and their persistence in carrying out these actions (Bandura, 1997; Compeau and Higgins, 1995; Schunk, 2008).

Bandura as cited by Rowbotham and Schmitz (2013) said that a strong sense of self-efficacy enhances the sense of accomplishment and well-being in many ways. A person reporting high levels of self-efficacy looks at

difficult tasks as challenges to be mastered, rather than threats to be avoided, which would inflict stress on the person. This positive outlook and absence of stress foster intrinsic interest and deep engrossment in activities, and thus also successful action.

The authors believe that a high level of self-efficacy must be viewed with caution. A nursing student who incorrectly believes that he or she is capable of performing a skill may harm the patient if he or she independently performs the skill instead of appropriately seeking help. In addition to possessing efficacy for task performance, it is important that students correctly calibrate their self-efficacy or make accurate estimates of their ability (Chen, 2003). In the provision of healthcare, inaccurate calibration of self-efficacy may lead to adverse patient outcomes. A nursing student who incorrectly believes that he or she is capable of performing a skill

may harm the patient if he or she independently performs the skill instead of appropriately seeking help. Conversely, a student who experiences low self-efficacy for tasks may delay initiation or avoid them altogether, again leading to possible adverse consequences for the patient. For this reason, students who reported low self-efficacy in performing physical assessment must be identified and motivated.

It was the authors' intention to disseminate results to clinical instructors as a guide for coaching students during clinical (hospital and clinic) duty. Clinical Instructors were told of areas (i.e. anatomical regions) in physical assessment where students reported to have low self-efficacy so that enhancements or corrections can be made. Similarly, clinical instructors were informed of areas where high levels of self-efficacy was reported in order that calibration of actual abilities could be made.

It is deemed to be the responsibility of nursing faculty to diligently monitor the performance of physical assessment by nursing students, quickly identify and rectify errors while concurrently motivating students to increase their competence in performing this skill.

This study reflects the perception of nursing students of Omar Al-Mukhtar College of Nursing in AY 2013-2014. It does not in any way represent the physical assessment self-efficacy of nursing students in other universities in Libya or elsewhere at any other period of time. The study does not intend to evaluate the actual ability of the students to perform physical assessment of patients. Validation of actual ability of students to perform physical assessment on actual patients can only be made during clinical exposure evaluation. The study covers 85% of total students. Those who were unable to complete the Physical Assessment Training and those who did not wish to participate in the study have been excluded.

CONCLUSION

Physical Assessment is an essential component of the nursing process. Immediately following the training course on Physical Assessment, the nursing students of Omar Al-Mukhtar University College of Nursing had high level of self-efficacy in performing this important nursing skill. The students did not significantly differ in their physical assessment self-efficacy when they were grouped according to their year level, rank and area of specialization.

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