

THE LEVEL OF JORDANIAN NURSE'S KNOWLEDGE ABOUT DYSPHAGIA: DESCRIPTIVE STUDY

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ABSTRACT

In Jordan, the percentage of those aged 65 and above will rise from 4.6% in 2012 to 4.9% in 2020. Therefore, it is mandatory to consider a demographic shift, when planning health services, especially among elderly people who have the risk of stroke. Dysphagia is frequent happening after stroke and needs attention and care, because of many complications that could occur, post stroke. The main purpose of the study is, to describe the level of Jordanian nurse's knowledge, about dysphagia, among stroke patients in Jordanian hospital.

Descriptive design was utilized. A convenience sample from the two university affiliated hospitals was used to recruit 140 Jordanian registered nurses. Descriptive statistics were used to examine some socio-demographic characteristics and work-related variables of participants. Secondly, it describes the participant's knowledge of dysphagia presented under subsections; knowledge of signs and symptoms and the complications of dysphagia.

Participants, in both groups had a moderate level of overall knowledge related to dysphagia. The study's findings support that dysphagia concept should be included in education and continuing training development programs and proliferation visibility of interdisciplinary work should be given to health care providers.

KEYWORDS: Dysphagia, Level of Nurse's Knowledge about Dysphagia, Stroke

INTRODUCTION

Jordanian population is approximately 9.5 million (The Hashemite Kingdom of Jordan, Department of Statistics (DOS), 2016). Age structure of the Jordanian population has been affected by birth, mortality rates, and immigration factors. In addition, the improved health care services in Jordan have increased the life expectancy, during 2007 – 2013, the average of life expectancy increased to 74.4 years. It is expected that, increased population lead an increase of the number of the elderly people, in Jordan. This in turn increases burden on the government budget and expands the amount of health expenditure. The global population, aged over 65 years is growing by 9 million a year, and by the year 2025 there will be more than 800 million people, above 65 years of age in the world (World Health Organization (WHO), 2016). In Jordan, the percentage of those aged 65 and above will rise from, 4.6% in 2012 to 4.9% in 2020. Therefore, it is mandatory to consider a demographic shift, when planning health services, especially among elderly people who have the risk of stroke (The High Health Council, The National Strategy for Health Sector in Jordan 2015- 2019).

According to WHO, (2015) an estimated 17.5 million people died from cardiovascular diseases in 2012, representing 31% of overall global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart diseases

and 6.7 million were due to stroke. In Jordan, deaths classified by causes indicated that, Ischemic Heart Disease is the main cause of death (18 % of overall deaths), cancer comes in second place and represents 15% of overall deaths, while stroke is the third cause of death and accounts for 12% of overall deaths (The Centers for Disease Control and Prevention (CDC), 2013 a). Awwad, (2016) in her study found that, the point prevalence of stroke among hospitalized patients in seven hospitals in Amman/ Jordan was 1.9 %, during one month (July, 2016).

Although, there are no information available on stroke patient's profile in Jordan (Al-Oraibi, 2012), yet among Jordanian community, the predominant cerebrovascular risk factors are a serious alarm (Eshah, 2013). The WHO, (2015) defines stroke as quickly developing clinical signs of focal disorder of cerebral function, with symptoms lasting twenty-four hours or longer and leading to death, with no apparent cause other than vascular origin. A stroke caused by the interruption of the blood supply to the brain, due to clot and the blocked oxygen and nutrients lead to damage of brain tissue (CDC, 2013 b). The impact of a stroke depends on which part of the brain is injured and how severely it is affected (Hinkle & Cheever, 2014; National institutes of Health, 2016).

The most common and earliest sign after a stroke is the difficulty in swallowing (dysphagia), in an approximately half of new stroke (Teasell, et al., 2013). Patients with stroke are at risk for dysphagia, because they often have decreased level of consciousness and poorer cranial nerve function (Tanner & Culbertson, 2014; Ringleb, et al., 2011). However, clinical signs and symptoms of dysphagia are not observable all times and the existence of an intact gag reflex, does not essentially rule out the opportunity of aspiration pneumonia (Smallwood, 2012). Dysphagia is frequent among stroke patients and a present alarming symptom that needs urgent attention. An estimated 20% to 50% of patients, who have suffered a stroke, have identifiable signs and symptoms of dysphagia (Ilott, et al., 2013). Edmiaston, Connor, Loehr, and Nassief, (2010), reported incidence of dysphagia in higher percentage (30% to 67%), this result is similar to Singh and Hamdy, (2006) and Mourão, et al., (2016) found that, more than half of stroke patients had severe dysphagia and this amplified hazards of aspiration pneumonia. With a subsequent mortality connected with pneumonia, dysphagia after stroke is recognized, as a predictor of mortality (Ringleb, et al., 2011). Although, dysphagia improves within two weeks for majority of stroke patients, many have faced long-lasting swallowing problems, which put them at risk for pneumonia, dehydration, malnutrition, and affects patients' quality of life (González-Fernández, et al., 2013). Up to researcher knowledge and after extensive search, no studies have identified the prevalence of dysphagia among stroke patients, in Jordan.

The presence of dysphagia, among stroke patients substantially lead to psychosocial, medical, and economic problems (Bakhtiyari, et al., 2015; Li, et al., 2015; Smallwood, 2012; Tanner & Culbertson, 2014; Vesey, 2013). Chang, et al., (2013) reviewed that, the death certificates of patients who died with stroke were 5%, due to aspiration, pneumonia and 1% due to choke. While Hinchey, et al., (2005) found that, up to 35% of deaths that may happen after a stroke are, due to pneumonia. Kamel, Bond, and Froelicher (2012) found that, Jordanian patients with stroke with eating difficulties played serious role in increased levels of caregiver's depression and burden, feeling of anxiety, and fear of aspiration and choking.

Knowledge of swallowing disorders, in terms of signs and symptoms, is fundamental for nurses working in different hospital settings. Knowledge about dysphagia disorder help nurses to be competent to advise other health care provider of the dysphagia onset (Dondorf, et al., 2016; Hines, et al., 2014; Mubeen & Butt, 2014). To provide high standard care for stroke patients, nurses need additional knowledge and skills, through orientation program

and continuing education (Albini, et al., 2013). Literature reports the need for training the nurses on, how to care stroke patients with dysphagia to enhance safety (Albini, et al., 2013; ASHA, 2016; Bakhtiyari, et al., 2015; Cichero, et al., 2009; Chung, Chen, & Lee, 2013; Cynthia, et al., 2010; Dondorf, et al., 2016; Hinchey, et al., 2005; Ilott, et al., 2013; Matesic, 2010; Rhoda & Pickel-Voight, 2015; Tanton, 2010).

Up to the researcher knowledge and after searching the different databases including on the electronic databases of CINAHL, Medline, Science Direct, Pub Med, Wiley Online Library, and The Jordanian Database for Nursing Research; no studies found, describe the level of Jordanian registered nurses knowledge about dysphagia in stroke patients. Therefore, this study was highlighting the significant dysphagia detecting, among stroke patients and their enough regular training for nurses.

PURPOSE OF THE STUDY

The purpose of this study is to describe the level of Jordanian registered nurses knowledge about dysphagia, in stroke patients.

RESEARCH QUESTION

What is the current level of Jordanian registered nurses knowledge about dysphagia in stroke patients?

THE LITERATURE REVIEW

The literature review was performed to inform the readers about the current literature that came up from many different sources, on the topic of the level of Jordanian registered nurses knowledge about dysphagia in stroke patients. The literature search took place from 2005 through 2017. The keywords were used in multiple combinations, in order to conduct an extensive search of these databases. The keywords used were dysphagia; level of nurse's knowledge about dysphagia; and stroke. These keywords were entered into multiple electronic databases. All the articles were obtained and reviewed, for possible inclusion in this research review, based on the specific inclusion criteria established. The following are the inclusion criteria for the integrative research review: 1) A research-based study, 2) Quantitative, qualitative, mixed methods and systematic reviews, 3) Written in English language, 4) Focuses on nurse' level of knowledge about dysphagia in and stroke patients. Two parts created the body of this literature review. The first part covers the literature on the concepts involved in this study, which are stroke and dysphagia. It provides an introductory discussion on the definition, prevalence, and normal and abnormal swallowing. The second part of the literature review covers the level of nurse's knowledge, about dysphagia in stroke patients.

Part 1: Stroke and Dysphagia

The global population aged over 65 years is growing rapidly and two-thirds of them will be living in developing countries (WHO, 2016). Jordan is one of developing countries, which are raising numbers of people who undergo stroke, due to changes in life style and numerous risk factors (WHO, 2013). The WHO estimates that, approximately one in six people will be suffering a stroke in their life (Hines, et. al, 2013).

A stroke is a serious medical condition that requires emergency care; it causes lasting brain damage, long-term disability, or even death (National institutes of Health, 2016). There are two main types of stroke, which are ischemic and hemorrhagic. Risk factors of stroke can be classified into modifiable and non-modifiable. Age and

sex are examples of well-known, non-modifiable risk factors for stroke. In contrast, examples on modifiable risk factors include tobacco smoking, physical activity, diet, and factors in the environment, such as passive smoking (Hinkle & Cheever, 2014). The most common risk factors in Jordan were inactivity (74%), overweight and obesity (59%), and smoking (34%) (Eshah, 2013). In study done between 2000 to 2002 by Bahou, Hamid, and Raqab, (2004) found that, the most common risk factors for stroke in Jordan were 1) Hypertension (76%); 2) Diabetes (43.5%); 3) Smoking (35%); 4) Hyperlipidemia (33%); 5) Ischemic heart disease (20.5%). In addition, Madae'en, et.al., (2013) conducted study in Jordan, about stroke awareness in the general population, they found that although the general population awareness about stroke was high, some gaps in knowledge still exist, which resulted in the late arrival of patients with stroke at specialized facilities, thus delaying treatment.

Normal swallowing needs the coordinated action of muscles of the mouth, pharynx, larynx, and esophagus, which are innervated by the central and peripheral nervous systems, the swallowing process is generally divided into three phases (oral, pharyngeal, and esophageal) (SIGN, 2010). Swallowing requires food passage from the mouth through the esophagus and into the stomach, without entering in the adjacent structures like nasal passages, larynx, or respiratory tract. The term dysphagia derived from the Greek roots dys (with difficulty) and phagia (to eat), can range from mild discomfort to a severe inability, to control the muscles needed for swallowing (Hinkle & Cheever, 2014). Dysphagia occurs in an approximately half of new onset strokes (Teasell, et. al, 2013). Dysphagia defines as a disruption of bolus flow, through the mouth and pharynx. As the function of swallowing is the safe delivery of a food bolus into the stomach, then the immediate complication of dysphagia is food entering the airway (ASHA, 2016; Tanton, 2010). General signs or symptoms of dysphagia are coughing during or after eating or drinking; extra effort or time needed to chew or swallow; food or liquid leaking from the mouth; gurgly voice; recurring pneumonia after eating; and weight loss. As a consequence, stroke patients may have malnutrition; aspiration; pneumonia; chronic lung disease; less enjoyment of eating or drinking; and embarrassment or isolation in social situations, involving eating (Chang, et al., 2013; Cohen, et al., 2016; González-Fernández, et al., 2013; Singh & Hamdy, 2006).

Part II: The Level of Nurse's Knowledge about Dysphagia in Stroke Patients

Knowledge of swallowing disorders in terms of signs and symptoms is fundamental for nurses. A lack of knowledge about dysphagia can result in hazardous consequences and this can be fatal for the patient (Mubeen & Butt, 2014). Chung, et al., (2013) showed that nurses who care stroke patients conducted the dysphagia screening test without a standard technique and inconsistently, because of lack of knowledge and skills and the absence of training programs. McHugh and Lake, (2010) showed that, nurses without knowledge to learn from experience will be a hazard and lead to poor judgment.

Several researchers have described the level of nurse knowledge about dysphagia, in stroke patients. (Albini, et al., 2013; Diendéré, et al., 2016; McHale, et al., 1998; Mubeen & Butt, 2014; Rhoda & Pickel-Voight, 2015). McHale, et al., (1998) conducted a study to describe the practical knowledge of expert twelve nurses. Data were collected by interviews in which, nurses deliberated the written narratives; nonparticipant observations and interviews. They found that, greatest nurse in the study did not accomplish a complete assessment of swallowing earlier in feeding patients, which was unexpected from expert nurses, as they did not implement this essential assessment. Moreover, Albini, et al., (2013) found that, nurses had a satisfactory knowledge about the definition and complications of dysphagia, however, they did not identify the stages, causes and specific care in cases of dysphagia, the self-assessment

reported deficiency of training, in conducting some procedures to patients with dysphagia. Diendéré, et al., (2016) applied standardized survey in cross-section, to determine nurse's knowledge and practices regarding swallowing disorders, in Burkina Faso. They found that, few nurses understood the importance of screening dysphagia. Similarly, Mubeen and Butt, (2014) conducted a survey to assess the knowledge of swallowing difficulties, by using a self-constructed five point Likert questionnaire. Their results indicated that, the nurses do not have adequate knowledge. Furthermore, Rhoda and Pickel-Voight, (2015) found that, awareness regarding dysphagia from convenient sample of 188 participants is weak; nurses have moderate knowledge of the signs, symptoms, and complications of dysphagia, but poor knowledge about its management.

Literature Gap

Most of the studies that describe the level of registered nurse's knowledge about dysphagia in stroke patients, used descriptive exploratory design with purposive sampling, to describe and assess knowledge about the care of the patients with dysphagia, with small sample size [Albini, et al., 2013; Mubeen & Butt, 2014; Rhoda & Pickel-Voight, 2015]. But, few of them investigated the practice of nurses (Freeland, et al., 2016; Diendéré, et al., 2016; McHale, et al., 1998). Most of the researchers concluded that, the nurses do not have adequate knowledge and practice in different aspect of dysphagia. Most of studies used self administered structured questionnaire, to evaluate knowledge, in contrary with McHale, et al., (1998) evaluated the practical knowledge and data were collected by written narratives; nonparticipant observations and interviews; and patient chart review.

This study describes the level of Jordanian registered nurse's knowledge, about dysphagia in stroke patients in the two university affiliated hospitals in Jordan. This study is the first of its kind in Jordan and in the Arab world; however, the outcome can be beneficial for profession at a national, or at an international level. The current study is unique and elicits a new body of knowledge and evidence, about dysphagia in stroke patients in the hospitals and informs health care providers and administrators of the importance of screening dysphagia, prior to initiating the oral intake of fluids or food. In addition, the review may also be a platform for future setup of policies and guidelines, for the health care providers to screen dysphagia among stroke patients

Setting of Study

The health sector in Jordan consists of service providers; public sector includes the Ministry of Health; private hospital; The Royal Medical Services; and The University Hospitals (The National Strategy for Health Sector in Jordan, 2015- 2019). The researchers conducted the study in the two university-affiliated hospitals in Jordan. Both hospitals are accredited big hospitals, with high occupancy rate and they provided standard care for a large number of Jordanian populations because, they function as primary referral centers for the entire Jordanian population.

Sample of the Study

The target population refers to all Registered Nurses (RNs), who are working in Jordanian hospitals. The accessible population includes Jordanian RNs, who are working in intensive care units (ICU), neurological and medical wards in the two university affiliated hospitals, that provide care for stroke patients and swallowing difficulties and agree to participate in the study. This study adopted a non-probability convenience sampling technique; to recruit participants who met the inclusion criteria in the two university affiliated hospitals.

The participants who meet the following inclusion criteria were recruited: 1) Nurses who had at least a bachelor degree, 2) Registered nurses who work in ICU, neurological and medical wards, 3) Registered nurses who provide direct nursing care to stroke patients with swallowing difficulties.

Exclusion criteria were 1) Practical and associate nurses, 2) Nurses working in management positions, 3) Nurses who had prior formal training and/or participated in screening dysphagia among stroke patients, 3) Nurses who participated in any research activity related to dysphagia.

Instrumentation

The first section of the questionnaire was, information about Jordanian nurse's characteristics, including socio-demographic and clinical related variables. Socio-demographic variable includes age, gender, marital status, and level of education. While, clinical related variables include employment status, years of nursing experience, years of working in a specialized area, years of experience with stroke, and training specialty.

The second section of the questionnaire was assessed; RN's knowledge of dysphagia which was developed by Rhoda and Pickel-Voight, (2015). This section is divided into 2 sub-sections. The first sub-section covers questions about dysphagia signs and symptoms among stroke patients, from B1-1 until B1-13, while, second sub-Section emphasizes on the complications of dysphagia among stroke patients, from B2-1 to B2-10. Responses were scored as follows: a correct response result in 1 point, an incorrect response resulted in 0 point, and an unsure response was counted as 0 point. The scoring of 0 for an unsure response on the assumption that, nurses who were "unsure" were also "unaware" of the correct response at the time of the data collection (Pickel-Voight, 2014). Independently, each section was scored and a total score for each section was obtained, by calculating total points. This applies for overall scores, as well for each section. Reliability levels were achieved: first sections signs and symptoms of dysphagia is 0.716 and second section about complications of dysphagia is 0.704 (Pickel-Voigt, 2014). Total scores of the continuous variables were calculated, by adding the items of each sub-section and comparing the criterion references (Pickel-Voigt, 2014) are as following:

- Score below 50% classified as low level of knowledge
- Score from 50% to 74% classified as moderate level of knowledge
- Score of 75% and above classified as high level of knowledge

Pilot Study

Pilot study was conducted to examine the feasibility of the instrument, regarding any problem that may be encountered during the administration of the instrument to the participants, and during coding and scoring of the instrument. Thirteen participants included in the pilot study, were excluding from the total sample size of this study. The inclusion and exclusion criteria of the pilot sample were similar to the original study sample criteria. The RNs reported clarity and understanding of questionnaire. All items appeared clear and easy to understand. The time needed to complete the questionnaires was, according to the convenience of participants. The Cronbach's alpha coefficient (internal consistency reliability) of the modified questionnaire was .791 and the reliability of the three subscales; questions about dysphagia signs, symptoms B1 and question about the complications of dysphagia B2 were 0.639, 0.733, respectively.

Ethical Considerations

Research Ethics Committee of the University of Jordan\ School of Nursing (IRB) approval and Institutional review board (IRB), selected the two university-affiliated hospitals, where the study was conducted. The study was conducted in accordance with the Declaration of Helsinki (Polit & Beck, 2012).

Data Collection Procedures

First, obtaining the approval from the Institutional Review Board (IRB) from the Ethics Committee of the University of Jordan, at School of Nursing and obtaining the approval from the human research ethics committees of the study settings. Second, presenting explanation of the study to nursing management of the selected hospitals and addressing personal contact information of the researcher. In each participating study settings, the researcher: a) Provided disclosure announcement that RN participation in the study will be voluntary, b) The RNs who meet the inclusion criteria were invited to participate in the study, either through personal invitation by the researcher, or by informing the supervisor of each ward and unit, c) Provided and informed consent that outlines the purpose and objectives of the study, confidentiality agreement, ethical approval details, and assurance that, they could withdraw at any time without penalty, d) All RNs who meet the inclusion criteria, and agree to participate in the study were obtained informed written consent. Then, participants completed socio- demographic questionnaire, within five minutes, e) The researchers assessed the level of Jordanian registered nurses knowledge about dysphagia in stroke patients and all measurements were completed in the floor, ward, and unit, in selected hospitals.

Results

The data was coded, entered, and analyzed using IBM Statistical Package, for Social Sciences for Windows (IBM SPSS Statistics) version 21.0. Initially, preliminary data cleaning was done. Data analysis includes descriptive statistics including frequency, mean, median, and standard deviation.

Participant's Socio-Demographic Characteristics and Work-Related Variables

A total of 212 Jordanian RNs participated in the study. After inclusion and exclusion criteria were accounted, four participants were excluded for the following reasons: two nurses were from managerial position and one nurse was not RN, one nurse did not complete all phases of the study. 140 RNs accepted the invitation and completed the study questionnaires. The final number of participants in each group was 70 participants. Sample characteristics were presented in Table.1

Table 1: Participant's Socio-Demographic Characteristics and Work-Related Variables

Variable	Group 1 (N = 70)	Group 2 (N = 70)
	(Mean, SD) Range	(Mean, SD) Range
Age	28.78 (4.23) 23-43	28.87(4.40) 23-44
Years of nursing experience	6.33 (4.06) .7-20	6.16 (4.07) 1-18
Years of working in specialized area	4.35 (3.72) 1-15	4.5071 (3.64) 1-15
Years of experience with stroke	4.90 (4.09) 1-15	5.57(4.21) 1-18

Variable	Group 1 (N = 70)	Group 2 (N = 70)
	(Mean, SD) Range	(Mean, SD) Range
Years' experience stroke patients with dysphagia	4.65 (4.1) .0-15	5.50 (4.29) .0-18
	Frequency (%)	Frequency (%)
Gender Male	(23)32.9%	(25)35.7
Female	(47) 67.1%	(45) 64.3
Marital Status Single	(29)41.4	(21)30
Married	(40)57.1	(49)70
Widowed	(1)1.4	(0) 0
Education BSc	(55)78.6	(61)87.1
Master	(15)21.4	(9)12.9
PhD	(0)0	(0)0
Caring stroke patients Yes	(67)95.7	(70)100
No	(3)4.3	(0) 0
Caring a stroke patient with dysphagia Yes	(62)88.6	(69)98.6
No	(8)11.4	(1)1.4
Received training to care stroke patients Yes	(3)4.3	(6)8.6
No	(67)95.7	(64)91.4

The Level of Jordanian Registered Nurse's Knowledge about Dysphagia in Stroke Patients Presented Under Subsections, as Follows

Knowledge about Signs and Symptoms of Dysphagia

For this section, a total score of 13 points could be succeeded. The overall achieved percentage of correct response of 64.88 % and 65.37% in group 1 and group 2 respectively, indicates a moderate knowledge (scores between 74% to 50% was classified, as "moderate"). Table 2 below, illustrates these results. The majority of participants 94.3% (n= 66) in group 1, while 87.1% (n= 61) in group 2 agreed that, "Coughing while eating" is a sign of dysphagia. 80-90% in group 1 realizes that, "Feeling of food getting stuck in the throat; Choking on saliva during non-mealtimes; Food remains in the mouth; poor chewing; and Weight loss" were signs of dysphagia. Similar to group 2, 72.9% complained of "Poor chewing" and 77.1% for "Weight loss". Only 15.7% in group 1 and 31.4% in group 2 identified that, "Patients do not always cough when they aspirate". "Skin irritations" and "Chest pain" were documented as disagree of signs of dysphagia in 1 (n= 48, 68.6%), (n= 34, 48.6%), respectively. While, in group 2 the results were (n= 44, 62%), (n= 41, 58.6%), correspondingly.

Table 2: Jordanian RN's Knowledge about the Signs and Symptoms of Dysphagia in Two Groups

Variables	Group 1 (N =70)			Group 2 (N = 70)		
	Agree n (%)	Disagree n (%)	Unable to decide n (%)	Agree n (%)	Disagree n (%)	Unable to decide n (%)
Coughing while eating	* 66 94.3	4 5.7	0 0	*61 87.1	9 12.9	0 0
Skin irritations	14 20.0	*48 68.6	8 11.4	21 30.0	*44 62.9	5 7.1
Feeling of food getting stuck in the throat.	*62 88.6	6 8.6	2 2.9	*61 87.1	9 12.9	0 0
Choking on saliva during non mealtimes.	*57 81.4	13 18.6	0 0	*61 87.1	6 8.6	3 4.3
Poor movement of the tongue	*53 75.7	13 18.6	4 5.7	*47 67.1	22 31.4	1 1.4

Variables	Group 1 (N =70)			Group 2 (N = 70)		
	Agree n (%)	Disagree n (%)	Unable to decide n (%)	Agree n (%)	Disagree n (%)	Unable to decide n (%)
Food remains in the mouth	*63 90	7 10	0 0	*62 88.6	8 11.4	0 0
Poor chewing	*56 80	12 17.1	2 2.9	*51 72.9	18 25.7	1 1.4
Patients always cough if they aspirate.	53 75.7	*11 15.7	6 8.6	43 61.4	*22 31.4	5 7.1
Difficulty closing lips	*29 41.4	31 44.3	10 14.3	*44 62.9	22 31.4	4 5.7
Weight loss	*56 80	9 12.9	5 7.1	*54 77.1	12 17.1	4 5.7
Frequent throat clearing after swallowing.	*40 57.1	23 32.9	7 10	*49 70	18 25.7	3 4.3
Hoarse voice	*47 67.1	18 25.7	5 7.1	*42 60	27 38.6	1 1.4
Chest pain	23 32.9	*34 48.6	13 18.6	26 37.1	*41 58.6	3 4.3

* Correct Answer

Knowledge about Complications of Dysphagia

For the section relating to knowledge of complications, a total score of 10 points could be accomplished. The overall achieved percentage of correct response of 71.57 %, and 68.24 in group 1 and 2, respectively, indicates moderate knowledge (scores between 74% to 50% was classified as "moderate"). Table 3, explains the knowledge of Jordanian RN concerning the complications of dysphagia. "Aspiration" and "Malnutrition" were documented as complications of dysphagia in high percent, 97-98% in both the groups. The majority of participants (n= 66, 94.3%) were in group 1, while 84.39% (n= 59) in group 2 agreed that, "Pneumonia" is a complication of dysphagia. 75-88% in both groups recognize that, "Increased mortality; General weakness; and Dehydration" are complications of dysphagia. "Anaphylactic Shock, Sudden heart attack, and Haematemesis" were documented as disagree of complication of dysphagia (n= 48, 68.6%), (n= 33, 47.1%), (n= 36, 51.4%), correspondingly in group 1. However, in group 2 the results were (n= 27, 38%), (n= 34, 48.6%), (n= 41, 58.6%), respectively. Whereas, only 5.7% (n= 4) in group 1 and 10% (n= 7) in group 2 identified that, "Problems with digestion " is not complication of dysphagia.

Table 3: Jordanian RN's Knowledge about the Complications of Dysphagia in Two Groups

Variables	Group 1 (N =70)			Group 2 (N = 70)		
	Agree n (%)	Disagree n (%)	Unable to decide n (%)	Agree n (%)	Disagree n (%)	Unable to decide n (%)
Increased mortality	*61 87.1	9 12.9	0 0	*56 80	14 20	0 0
Pneumonia	*66 94.3	2 2.9	2 2.9	*59 84.39	9 12.9	2 2.9
Anaphylactic Shock	15 21.4	*48 68.6	7 10	42 60	*27 38	1 1.4
General weakness	*53 75.7	15 21.4	2 2.9	*59 84.3	9 12.9	2 2.9
Problems with digestion	63 90	*4 5.7	3 4.3	63 90	*7 10	0 0

Variables	Group 1 (N =70)			Group 2 (N = 70)		
	Agree n (%)	Disagree n (%)	Unable to decide n (%)	Agree n (%)	Disagree n (%)	Unable to decide n (%)
Aspiration	*69 98.6	1 1.4	0 0	*69 98.6	1 1.4	0 0
Dehydration	*62 88.6	6 8.6	2 2.9	*58 82.9	11 15.7	1 1.4
Sudden heart attack	24 34.3	*33 47.1	13 18.6	33 47.1	*34 48.6	3 4.3
Malnutrition	*69 98.6	1 1.4	0 0	*68 97.1	2 2.9	0 0
Haematemesis	24 34.3	*36 51.4	10 14.3	28 40	*41 58.6	1 1.4

* Correct Answer

The mean score of participant's baseline total knowledge level was 18.32 (SD = 2.73) and the mean response for three knowledge sub-sections (signs and symptoms of dysphagia (M= 9.27, SD= 1.75); complications of dysphagia (M= 7.62, SD= 1.26). However, the mean score of participant's in group 2 total knowledge level was 17.20 (SD = 3.37) and the mean response for three knowledge sub-sections (signs and symptoms of dysphagia (M= 9.28, SD= 1.87); complications of dysphagia (M= 6.88, SD= 1.63). The majority of Jordanian RNs 48.6% (n= 32), in group 1 fall in second categories which means a moderate level knowledge in section, about signs and symptoms of dysphagia, while, 33 RNs (47.1%) in group 2 fall in third categories, which means high level knowledge. However, in section of knowledge about complications of dysphagia, more than half of participant 57.1% (n= 40), in group 1 fall in third categories, which means a high level knowledge, while in group 2 in the similar percent fall in second categories, which means moderate level knowledge. Nevertheless, majorities of participants (71.4%) in group 1 had moderate level of total overall knowledge (n= 50). While, 4.3% (n=3) had a low level of knowledge and 24.3% (n= 17) had a high level of knowledge. While, in the group 2, (8.6%) of participants (n=6) had a low level of knowledge and two third (75.7 %, n= 50) had a moderate level of knowledge, while 15.7 % of participants (n= 11) had a high level of knowledge. Table 4 shows these results.

Table 4: Level of Jordanian RN's Knowledge about Dysphagia in Two Groups (N = 140)

Variables	Categories*	Group 1(N=70)			Group 2 (N = 70)		
		n (%)	M (SD)	Level	n (%)	M (SD)	Level
Section of knowledge about sign and symptoms of dysphagia	1.00	4 (5.7)	9.27 (1.75)	Moderate	5 (7.1)	9.28 (1.87)	High
	2.00	32 (48.6)			32 (45.7)		
	3.00	34 (45.7)			33 (47.1)		
Section of knowledge about complications of Dysphagia	1.00	1 (1.4)	7.62 (1.26)	High	6 (8.6)	6.88 (1.63)	Moderate
	2.00	29 (41.4)			40 (57.1)		
	3.00	40 (57.1)			24 (34.3)		
Total overall knowledge	1.00	3 (4.3)	18.32 (2.73)	Moderate	6 (8.6)	17.20 (3.37)	Moderate
	2.00	50 (71.4)			53(75.7)		
	3.00	17 (24.3)			11(15.7)		

n: Frequency %: Percent M: Mean SD: Standard Deviation

*Categories means knowledge level

- Score below 50% was classified as "low" = 1
- Score between 74% to 50% was classified as "moderate" = 2
- Score above 75% was classified as "high" =3

DISCUSSIONS

The study findings showed that, participants in both groups were similar, in terms of age in years, years of nursing experience, years of specialized area, years of experience with stroke patients, and years of care to stroke patient with dysphagia. In addition, Jordanian RNs have moderate overall knowledge about dysphagia, presented under subsections

Participant's Socio-Demographic Characteristics and Work-Related Variables

The age of the study sample ranged from 23 to 44 years, in both groups. In current study findings, the majority of the Jordanian RNs were in the age category 25-30 years and more than half of RNs were married. While, the age categories between 33-44 years were minorities (10%), in both groups. These demographic findings are consistent with the Jordanian RNs demographic characteristics, from The High Health Council in their report of the National Strategy for Health Sector, in Jordan 2015- 2019 that, the youth (30 years or less) set up about 40% of the total health workforce in Jordan. In addition, The High Health Council in their report also confirmed that, most of health workers in Jordan are aged less than 50 years (85% of them do not exceed 50 years of age). An explanation for this low number could be that, nurses in the age group 45-50 years, due to the need of physical demands of the job that leads to entering into early retirement. As result of that, losing these experienced nurses deprives newer nurses, of the opportunity to learning valuable skills and knowledge from older nurses (Berliner &Ginzberg, 2002). The consequence of the loss of trained, experienced nurses is that, the quality of patient care declines. Novice nurses cannot be expected to have the ability, intuition and confidence of an expert nurse (Benner, 1982). These current results are different to the findings from a study, done in Namibia by Rhoda &Pickel-Voight (2015) that, respondent's age ranged from 21 to 66 years that included younger and older nurses. There are relatively few participants in the age range of 31-40 years; they concluded that, one possible reason could be that, nurses are obliged to stop working, as a result of family responsibilities. A study done by Nooney, Unruh and Yore (2010) confirmed that, early separation from employment in the age group of 30 to 40 years, due to marriage, maternity leave, caring for young children and the elderly were common.

The findings of the current study indicated that, more than half of participants (67.1%) in both groups were female. This finding is congruent with report from The High Health Council that calculated health care providers and their characteristic. They reported that, females constitute about 44% of the total workers in the health sector, in Jordan (The High Health Council, The National Strategy for Health Sector in Jordan 2015- 2019). Likewise, a survey conducted in Pakistan by Mubeen and Butt (2014), to assess the knowledge of swallowing difficulties of 80 nurses, 71 (88.8%) were female and the rest were male.

More than two third of Jordanian RNs had BSc degree, while less than one over five percent had master degree. The justification for it is, because of advance in higher education and spread of many universities in different cities in Jordan, that gives more opportunities to RNs to continue their education in postgraduate studies in different specialties. Al-Ghabeesh et al., (2012) revealed that, the baccalaureate nursing education forms the foundation for nursing practices.

The years of experiences in nursing of the study sample, ranged from one month to twenty years in both groups. More than half of the Jordanian RNs had 6 years of experience, while 41.4% of participants have 7-20 years of experience. In comparison to other research, the current study findings are congruent with a study done by Mubeen and Butt (2014), they reported that, the majority of nurses (91.2%) have 2- 8 years experience and the remaining nurses had experience of 9-15 years. The high representation of nurses with more than 6 years of experience explained that, salaries of

qualified nurses are reasonable, in comparison to salaries of novice nurses. Furthermore, the university-affiliated hospital, provides a worthy medical assurance, good salary and feeling of trustworthiness, in working in these hospitals as well, to care for patients because of working in an accredited hospitals. The majority of Jordanian RNs in selected area were provided care for stroke patients, with mean years of experience of cared stroke patients was 5 years. The majorities of RNs (88.6%) were provided care for stroke patients, who had dysphagia.

Only three Jordanian RNs in experimental group received training, to provide care for stroke patients, the type of training were care of bedsores and feeding of stroke patients. Only six Jordanian RNs in group 2 received training, to provide care for stroke patients the rest of RNs did not receive any training for stroke patients (91.4%). From the researcher's point of view, this lack of knowledge regarding dysphagia, may be the lack of educational and training programs about screening dysphagia, in Jordanian hospitals and due to weak awareness of in-service education department in selected hospital, about benefit of screening dysphagia, among stroke patients and the roles of RNs in that procedure. The majority of RNs (97.1 %) would like to receive further formal training and information, about swallowing disorder and dysphagia. In general, I can say that ICU, neurological and medical wards have more contact with stroke patients with dysphagia, and thus, the motivation of these nurses was strong enough to awake their interest, to receive training and information about dysphagia.

Several researchers have described RN's knowledge, about dysphagia (Diendéré, et al., 2016; Rhoda & Pickel-Voight, 2015; Mubeen & Butt, 2014; Albini, et al., 2013; McHale, et al., 1998), in comparison to another study done in Namibia by Rhoda & Pickel-Voight (2015) found that, the awareness of the nurses regarding dysphagia is weak; nurses have moderate knowledge of the signs, symptoms, and complications of dysphagia, but poor knowledge about its management. Moreover, Albini, et al., (2013) in Brazil found that, nurses had a satisfactory knowledge about the definition and complications of dysphagia, however, lack of knowledge about the stages, causes, and specific care, in cases of dysphagia. These results were not congruent with study done in Pakistan by Mubeen, Butt (2014) found that, nurses have lack knowledge regarding dysphagia and its screening.

Participant's Knowledge about Dysphagia Presented Under Subsections, as Follows

Jordanian Rns Knowledge about Signs and Symptoms of Dysphagia

The overall achieved percentage of correct response pretest before application of training program was 65 %, in both groups that indicates a moderate knowledge. In comparison to other research, the current study findings are congruent with Rhoda and Pickel-Voight (2015), found in their study that, the achieved overall percentage of 64.62% indicates that, the participants had moderate knowledge of the signs and symptoms of dysphagia. RNs need to be aware of the signs and symptoms of dysphagia so that they are able to identify patients with dysphagia. Early identification of dysphagia can reduce further complications (Emiaston, Connor, Steger-May, & Ford, 2014; Tanton, 2010). Less than one sixth of participants correctly know that "Patients do not always cough when they aspirate" as sign and symptom of dysphagia. This finding percent is higher than percent from Rhoda and Pickel-Voight (2015) finding, which they found that, was less than one tenth of the participants answered this question correctly. One possible explanation regarding the poor result of this question that the majority of RNs in hospitals detect dysphagia and aspiration through cough and there is no alertness between coughing and aspiration. Rhoda and Pickel-Voight (2015) mention that, the lack of a cough reflex means that no warning of dysphagia is given, therefore, the problem is not treated, and the patient continues to ingest food and liquids into the lungs, elevating the risk for development of complications

In addition, more than two-third of participants in both groups correctly answered that, "Choking on saliva during non mealtimes" is sign of dysphagia; also, this percent higher than Rhoda and Pickel-Voight (2015) percent in their study, which was 59.8% of participants. In the current study, "Chest pain" is answered correctly as not symptom of dysphagia in approximately half of participants, in both groups that was inconsistent with Rhoda and Pickel-Voight (2015) they found that, one fourth of the participant answered this question correctly.

In the present study, the majority of the participants were sure of their answers when questions were asked concerning the generally visible signs and symptoms of dysphagia. However, the questions, which were indirect signs and symptoms of dysphagia, were poorly answered. These results are similar to a study done by Rhoda and Pickel-Voight (2015) and Robertson (2008) they reported that health care providers like nurses are more aware of visible than of the invisible signs and symptoms of dysphagia. It can be shown that Jordanian RNs have a moderate knowledge about the general and visible signs and symptoms of dysphagia, but lacking invisible signs and symptoms.

Jordanian Rns Knowledge about Complications of Dysphagia

The overall achieved percentage of correct response indicates moderate knowledge. In comparison to other research, the current study findings are higher percent than percent in study that was done by Rhoda and Pickel-Voight (2015). In current study, "Aspiration" and "Malnutrition" were documented as complications of dysphagia in high percent, near to 100% 97-98% in both groups. These results are higher than to Rhoda and Pickel-Voight (2015), which they reported that, "Aspiration" and "Malnutrition" are 89.1%, 85.9%, respectively, and are complications of dysphagia. The majority of participants in both groups agreed that, "Pneumonia" is complication of dysphagia, This is inconsistent with Rhoda and Pickel-Voight (2015) and Robertson (2008) which they found that, the participants were less aware about recurrent pneumonia, among dysphagia patients. The researcher believes depending on literatures that, dysphagia may lead to pneumonia, this was supported by Singh and Hamdy, (2006) and they found that, dysphagia interrupts half of acute stroke patients and carries three folds to seven folds amplified hazards of pneumonia.

More than two third of participant in both groups recognize that, "Increased mortality; General weakness; and Dehydration" are complications of dysphagia. The moderate to high results in these questions indicates that, nurses are aware of the complication of "Mortality, "General weakness; and Dehydration" among stroke patients. The literature supports that, these complications were frequent in dysphagia (Arnold et al., 2016; Hinchey, et al. 2005).

Implications for Nursing Practice, Research, and Education

Dysphagia and swallowing disturbances are very common among stroke patients and needs greater recognition, by health care professionals. Nurses should not underestimate the impact of dysphagia, on the quality of life among stroke patients and have sufficient knowledge about signs, symptom and complication of dysphagia. The results of the current study highlights that, RNs need more education about dysphagia. Moreover, nursing educators in curriculum should stress on the areas of dysphagia. Lastly, RNs need to be furnished with high level of theoretical, as well as practical aspects to be the experts in their fields.

CONCLUSIONS

The reason that, nurses are in twenty-four hours over seven days in a week, in patients' contact; they make a significant role in screening dysphagia, among stroke patients. This study added to the nursing knowledge, based on the research, and provides information that is used to develop future educational and training programs; to enhance nurse's knowledge about dysphagia.

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