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Research Article

How Competent are Health Professionals in Delivering Nutrition Education? A Cross-Sectional Study in Ebonyi State, Nigeria

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Background: The World Health Organization recognises nutrition as the basis for good health and the leading edge of disease prevention. Nutrition education is also key in facilitating healthy habits in all spheres of life. Health professionals are central to informing good dietary habits through nutrition education since they are seen as reliable sources for nutritional information. This study assessed health professionals' competencies in nutrition education in Ebonyi State, Nigeria.
Methodology: A health facility-based cross-sectional study among health professionals was conducted in three selected hospitals from three Local Government Areas in Ebonyi State, Nigeria. A total of 421 health professionals selected by multistage sampling were surveyed. Data analysis was done using IBM SPSS version 25. Chi-square test and multivariate analysis using binary logistic regression were used in the analysis, and the level of statistical significance was determined by a p-value of <0.05. Overall adequate competence of health professionals on nutrition education was derived by the proportion of respondents who had good knowledge, good perception, and good practice of nutrition education.
Results: The mean age of the respondents was 32.4 ± 8.9 years, and the majority, 67.5% (283), were females. The highest proportion of respondents, 59.4% (249), were nurses. Less than one-tenth of respondents, 7.4%, had good knowledge of nutrition. A higher proportion of respondents, 85.9% (360), had good practice of nutrition education while less than half, 42.5% (178), had a good perception of nutrition education. A minor proportion of respondents, 43.0% (180), had adequate competency in nutrition education. Predictors of health professionals' competencies included having postgraduate level of training (AOR= 0.4; 95% CI = 0.2 - 0.8), being a physiotherapist (AOR = 17.2; 95% CI = 1.1 - 267.5), being < 39 years (AOR = 5.8; 95% CI = 2.1 – 16.3) and 40 - 49 years (AOR = 4.8; 95% CI = 1.6 – 14.6).
Conclusions: A minor proportion of respondents had adequate competency in nutrition education. The knowledge of nutrition among health professionals is also poor. The health professionals may require nutrition training for

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proper delivery of nutrition education. There is a need to incorporate regular in-service training as a strategy for improving health professionals' nutritional competency.

Introduction

Appropriate nutrition is a key aspect of public health. It is also the bedrock of good health and the cutting edge of disease prevention [1]. The World Health Organization (WHO) defines nutrition as the intake of food, considered in relation to the body's dietary needs [1]. The foods we eat, and the nutrients they provide, are crucial for growth, development, functional capabilities, and health. Nutrition plays a vital role in the life of an individual at all ages. However, the composition of healthy nutrition varies with respect to age as each age group has specific nutritional needs that must be met to ensure good health. It also varies with sex, body weight, level of growth, physical activity, disease states, rehabilitation and physiological status of individuals such as lactation and pregnancy [2].

Health professionals including doctors, dentists, nurses, physiotherapists, and dietitians play a crucial role in the preventive, curative, promotional or rehabilitative nutritional health care services provided in a systematic way to consumers. This is because of their high involvement in clinical practice and their day-to-day contact with patients. They are also held in high regard as the most credible source of nutritional messages [3][4]. The provision of these messages should cut across all spans of life ranging from birth to old age. This means that understanding nutrition principles and their impact on health is pertinent, thus, the need for health professionals to adequately engage patients in the proper nutritional care services.

The perpetuation of good health through prompt dietary behaviour cannot be overemphasised. However, there have been dramatic changes in diet and lifestyle taking place in developing countries because of globalisation and their impact on the health of the population. Nutrition education should be a prerequisite to acceptance and consumption of food. Healthy nutrition is neglected in daily medical practice as the practice of medicine takes a sentient path treating sicknesses rather than an ardent path looking at prevention. With the WHO Decade of Action on Nutrition, it is time to ensure all health professionals will be able to provide evidence-based nutrition education. This is of utmost need as a poor diet is the leading risk factor for deaths in the majority of countries globally [5]. Hence, assessing their competencies (knowledge, perception and practices) in nutrition to be able to give adequate nutrition education and counselling to patients is vital.

Competency can be defined as a specific, identifiable, definable, and measurable knowledge, skill, ability and/or other deployment-related characteristic (for example, behaviour, attitude) which a human resource possesses, and which is necessary for or material to the performance of an activity within a specific business context [6]. It is simply the ability of an individual to showcase his/her stepwise approach to performance. Competency can be grouped into three: a Knowledge component; a Know-how component describing personal experiences and working conditions, which is also the practical knowledge that includes how to get things done; and a component describing the act that drives performance.

Doctors and other health professionals can positively impact patient care by synchronising and reinforcing the importance of nutrition across all subspecialty areas via nutrition education, as they have been prioritised as the professional group most in need of understanding nutrition, nutrition education and communication [7]. Health professionals' investment in patients' dietary habits is important in bringing about behaviour change but has been described as suboptimal due in part to a lack of comfort in counselling about healthful dietary patterns [8]. With nutrition education, we can secure the future of our health and 'prevention is better than cure' is the way to go. The aim of this study was to assess the competencies of health professionals in nutrition education in the study area.

Materials and Methods

Study Setting

The study was carried out in health facilities that provide comprehensive care for patients in Ebonyi State. Ebonyi State is in the South-east geopolitical

zone of Nigeria. The state is made up of thirteen local government areas (LGAs) grouped into three senatorial zones. Nutritional services are available in the three tiers of health care delivery in the State. Health services are provided through the public and private health facilities in the state. There are five hundred and fifty-four (554) health facilities, both public and private, in the state. The public health facilities consist of 370 (66.8%) facilities while the private health facilities are made up of 184 (33.2%) facilities [9]. The public health facilities providing health services include one Federal teaching hospital, 40 General hospitals, and 144 Primary Health Care (PHC) facilities. Three hospitals selected were Alex-Ekwueme Federal University Teaching Hospital (Ebonyi North LGA), Mater Misericordiae (Afikpo North) and Rural Improvement Mission Hospital (Ikwo LGA). The study recruited doctors, dentists, nurses, physiotherapists and dietitians due to their frequent contact with patients with different ailments requiring nutrition education.

Study Design

A health-facility-based cross-sectional study was conducted among health professionals working in selected hospitals that provide comprehensive care to patients, including nutritional services, from three different local government areas within the state.

Sample size

The minimum sample size for the study was determined using the Cochran formula for cross-sectional studies [10]. A sample size of 421 respondents was included in the study based on a type 1 error (α) of 0.05, a tolerable margin of error of 0.05, a 10% non-response rate, and the proportion of 44% being nurses with good knowledge of nutrition from a previous study in Ghana [8].

Sampling Technique

The sampling of health professionals was done using a multistage sampling technique comprising three stages. In the first stage, a simple random sampling technique of balloting was used to select one Local Government Area (LGA) from each of the three senatorial zones in the State. In the second stage of the sampling process, in each LGA, one health facility was selected by balloting from a list of all health facilities in the Local Government Area. In this case, the health facilities selected were Alex-Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA) (Ebonyi North LGA), Mater Misericordiae Hospital Afikpo (MATER) (Afikpo North LGA), and Rural Improvement Mission (RIM), Ikwo (Ikwo LGA).

In the third stage, a list of all health professionals working in AEFUTHA, RIM, and MATER health facilities was obtained from the hospital management of the respective hospitals. Proportionate allocation of the sample size was done across the respective health professionals using the obtained list of the number of health professionals in the selected hospitals to get representative samples for the study using a systematic sampling method. The sampling interval, K, was determined by dividing the sampling frame by the proportionately allocated samples for each health profession. The first respondent was selected using a simple random sampling technique of balloting, after which every Kth number was selected. Thus, we selected the 421 respondents who met the selection criteria from the different health professional groups in the hospitals, comprising 150 doctors, 251 nurses, 13 physiotherapists, 4 dietitians, and 3 dentists.

Study Instrument and Data Collection

A structured questionnaire, pre-tested among 40 health professionals in another health facility, was used for the study. The results of the pretesting were useful in modifying any sections that needed adjustment in the questionnaire. The questionnaire was adapted and modified from the general nutrition knowledge questionnaire [11], and consisted of four sections. Section A captured the socio-demographic details of health professionals. Section B obtained data on health professionals' nutrition knowledge using multiple-choice questions. Section C obtained data on health professionals' perception of nutrition education and counselling. Section D obtained data on health professionals' practices of nutrition education.

Data Management

Data collection and editing were manually done, while data entry and analysis were conducted using IBM Statistical Product for Service Solutions (SPSS) version 25. Continuous variables were summarised using means and standard deviations, while categorical variables were presented using frequencies and proportions. The Chi-square test of statistical significance was used to compare the difference in proportions between two categorical variables. Multivariate analysis using binary logistic regression was used to determine the predictors of the outcome variable. Variables with a p-value <0.2 after

bivariate analysis were included in the logistic regression model to determine the predictors of the outcome variable. The results of the logistic regression analysis were presented using adjusted odds ratio and a 95% confidence interval. The level of statistical significance was determined by a p-value of <0.05.

Health professionals' knowledge of nutrition was assessed using 21 variables. For each variable, a correct response was given a score of one, while an incorrect response was assigned a score of zero. Respondents that scored ≥50% of the total score were regarded as having good knowledge, while those that scored <50% were designated as having poor knowledge. Similar calculations were used to derive health professional perception of nutrition education, which was assessed using 11 variables, and practice, which was assessed using 15 variables. Overall adequate competence in nutrition education was derived by the proportion of respondents who had good knowledge, good perception, and good practice of nutrition education.

Ethical Consideration

Ethical approval was obtained from the Health Research and Ethics Committee of the Alex-Ekwueme Federal University Teaching Hospital Abakaliki, Nigeria. Permission to carry out the study was also obtained from the Medical Directors of the selected hospitals. Respondents were informed of the voluntary nature of their participation and assured of anonymity and confidentiality of all data provided.

Results

The mean age of the respondents was 32.4 ± 8.9 years, with the majority of respondents (186, 44.4%) being under 40 years of age. There were more females, 67.5% (283), and 78.3% (328) had been in service for less than 10 years. The highest proportion of respondents, 59.4% (249), were nurses, and the majority of the respondents, 69.0% (289), worked at AEFUTHA (Table 1).

Variable	Frequency (n=419)	Percent (%)
Age of respondents in groups		
≤29 years	186	44.4
30-39	137	32.7
40-49	74	17.7
≥50 years	22	5.2
Sex		
Male	136	32.5
Female	283	67.5
Marital status		
Never married	223	53.2
Married	186	44.4
Widowed	6	1.4
Divorced	4	1.0
Professional status		
Nurse	249	59.4
Doctor	150	35.8
Physiotherapist	12	2.9
Dentist	4	1.0
Dietitian	4	1.0
Highest level of training		
Degree	256	61.1
Postgraduate	92	22.0
Diploma	71	16.9
Length of practice		
<10 years	328	78.3
>10 years	91	21.7
Facility		
AEFUTHA	289	69.0
MMH	125	29.8
RIM	5	1.2

Table 1. Socio-demographic characteristics of respondents

AEFUTHA: *Alex Ekwueme Federal University Teaching Hospital Abakaliki*
MMH: Mater Misericordiae Hospital
RIM: Rural Improvement Mission

Table 2 shows the knowledge of nutrition among the respondents. Only correct responses were used. The majority of respondents, 57.5%, were aware of which eating habits pose a greater risk for dental cavities. Very few respondents, 9.1%, knew the stage of nutrition transition for Nigeria (Table 2). Only 7.4% had a good knowledge of nutrition.

Variable	Frequency (n=419)	Percent (%)
WHO has a target for trans fatty acids	125	29.8
There is a relationship between Diet and BP	121	28.9
Low-fat diet has an effect on TGL	206	49.2
Highest source of monounsaturated fats	72	17.2
The stage of nutrition transition for Nigeria	38	9.1
Dietary change has an effect on CVD risk	180	43.0
Basal metabolic rate has a reverse effect	113	27.0
Food container essential function	72	17.2
Vitamin B-12 deficiency is most seen in	91	21.7
Definition of Nutrition transition	214	51.1
Fruit and vegetables daily serving	95	22.7
Beverages without fat, sugar, or oils	149	35.6
Foods that are insoluble fibre	120	28.6
Awareness of greater risk of cavities	241	57.5
Dietary change and its link	134	32.0
Factors for Susceptibility to cancer	188	44.9
Meaning of malnutrition	92	22.0
Foods with high sodium content	142	33.9
Content of low-fat serving foods	79	18.9
Meaning of nutrition facts label	79	18.9
Foods with low glycaemic index	174	41.5
Good knowledge of nutrition	31	7.4
Poor knowledge of nutrition	388	92.6

Table 2. Knowledge of nutrition among the respondents (only correct responses included)

CVD: Cardiovascular Disease
TGL: Triglycerides
WHO: World Health Organization

Table 3 shows health professionals' perceptions of nutrition education components. The majority of respondents, 82.3%, need more training on nutrition, while 41.1% feel professionally incompetent to advise patients on nutrition education.

Variable	Frequency (n=419)	Percent (%)
HPs have good knowledge of nutrition for patient management		
Positive	248	59.2
Negative	171	40.8
NE is important for patient management		
Positive	356	85.0
Negative	63	15.0
NE is effective in disease prevention		
Positive	364	86.9
Negative	55	13.1
NE is part of routine management		
Positive	327	78.0
Negative	92	22.0
NE should be given before drug therapy		
Positive	301	71.8
Negative	118	28.2
Patient NE is not an effective use of my time		
Positive	283	67.5
Negative	136	32.5
Patient NE is effective for compliance		
Positive	336	80.2
Negative	83	19.8
HP feel professionally competent for NE of patients		
Positive	247	58.9
Negative	172	41.1
HPs believe change to healthy living is important in any stage of life		
Positive	282	67.3
Negative	137	32.7
HPs feel it's important to assess patients' ability to read food label		
Positive	301	71.8
Negative	118	28.2
HP have need for further nutrition training		
Positive	345	82.3
Negative	74	17.7
Overall Perception of Nutrition Education		
Good	178	42.5

Variable	Frequency (n=419)	Percent (%)
Poor	241	57.5

Table 3. Health professionals' responses to components of perception of nutrition education

HPs: Health Professionals
NE: Nutrition Education

Table 4 displays the frequency of practice components of nutrition education by health professionals. Although a minor proportion of health professionals, 25.3%, had a positive assessment of their skills in nutrition education, a higher proportion, 74.7%, lacked nutrition education skills.

Variable	Frequency (n=419)	Percent (%)
HPs have capacity to give nutrition education		
Positive	124	29.6
Negative	295	70.4
HPs frequently discuss NE with patients		
Positive	147	35.1
Negative	272	64.9
HPs are interested in getting nutrition information		
Positive	285	68.0
Negative	134	32.0
HPs start NE during consultations		
Positive	128	30.5
Negative	291	69.5
HPs give specific nutritional advice		
Positive	367	87.6
Negative	52	12.4
HPs use resources for nutritional information		
Positive	303	72.3
Negative	116	27.7
HPs place value on nutritional therapy		
Positive	136	32.5
Negative	283	67.5
HPs assessment of their own NE skills		
Positive	106	25.3
Negative	313	74.7
Practice of nutrition education		
Good	360	85.9
Poor	59	14.1

Table 4. Practice components of nutrition education by health professionals

NE: Nutrition Education

Table 5 displays the health professionals' overall competency in nutrition education. Among the respondents, 31 (7.4%) had good knowledge of nutrition, 178 (42.5%) had a good perception of nutrition education, and 360 (85.9%) had good practice of nutrition education. Of the respondents, 180 (43.0%) had adequate competency in nutrition education.

Variable	Frequency (n=419)	Percent (%)
Assessment of competency in nutrition education		
Adequate	180	43.0
Inadequate	239	57.0

Table 5. Health professionals' Overall competency in nutrition education

Table 6 shows the predictors of health professionals' competency in nutrition education. Those health professionals who were ≤ 39 years were about six times more likely to have competency in nutrition education when compared with those aged 40-49 years (AOR = 5.8; 95% CI = 2.1 – 16.3). Those who had postgraduate level of training were four times less likely to have competency in nutrition education when compared with those who had just a diploma in nutrition (AOR= 0.4; 95% CI = 0.2 - 0.8). Those respondents who were physiotherapists were seventeen times more likely to have competency in nutrition education when compared with dietitians (AOR = 17.2; 95% CI = 1.1- 267.5).

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	Competency in nutrition education (n=419)		p value[a]		95% CI[b] (Lower – Upper)
	Good N (%)	Poor N (%)			
Age group					
≤ 39 years	132 (40.9)	191 (59.1)	0.001	5.8	2.1 – 16.3
40-49	31 (41.9)	43 (58.1)	0.005	4.8	1.6 – 14.6
≥ 50 years	17 (77.3)	5 (22.7)		1	
Gender					
Male	60 (44.1)	76 (55.9)	0.110	NA	
Female	120 (42.4)	163 (57.6)			
Marital status					
Single	104 (44.6)	129 (55.4)	0.602	NA	
Married	76 (40.9)	110 (59.1)			
Professional status					
Doctor	55 (36.7)	95 (63.3)	0.166	5.1	0.5 – 51.2
Dentist	0 (0.0)	4 (100.0)	0.999	5016046273	0.0
Nurse	120 (48.2)	129 (51.8)	0.469	2.4	0.2 – 23.9
Physiotherapist	2 (16.7)	10 (83.3)	0.042	17.2	1.1 – 267.5
Dietitian	3 (75.0)	1 (25.0)		1	
Facility					
AEFUTHA	115 (39.8)	174 (60.2)	0.347	2.4	0.4 – 14.7
MMH	62 (49.6)	63 (50.4)	0.718	1.4	0.2 – 8.9
RIM	3 (60.0)	2 (40.0)		1	
Highest level of training					
Degree	99 (38.7)	157 (61.3)	0.532	0.8	0.5 – 1.5
Postgraduate	52 (56.2)	40 (43.5)	0.010	0.4	0.2 – 0.8
Diploma	29 (40.8)	42 (59.2)		1	

Table 6. Predictors of health professionals' competency in nutrition education

[a] *p-value at bivariate analysis*

[b] *95% Confidence interval at multivariate analysis*

AEFUTHA: Alex-Ekwueme Federal University Teaching Hospital Abakaliki

MMH: Mater Misericordiae Hospital

RIM: Rural Improvement Mission

Discussion

This study assessed health professionals' competencies in nutrition education in the study location. Nutrition is a critical component of both acute and chronic disease management, as well as health and wellness. Health professionals' ability to

recognise diet-related ailments, understand the importance of nutritional issues, and take the initiative to make nutrition a pivotal part of their practice is crucial for positive patient outcomes. Understanding the concept of collaborative competencies will greatly aid in clearly delineating how interprofessional measures differ from discipline-specific concepts [12].

From the results of our study, less than one-tenth of health professionals had good knowledge of nutrition. This figure from our results is at an unacceptable level, especially when considering the importance of providing nutrition education and counselling services to clients or patients. This dearth in the number of health professionals who have good knowledge of nutrition could stem from a number of possible reasons. These range from nutrition education not being a specific course contained in the curriculum covered during undergraduate training, to inadequate attention given to the topic by teachers and students, to a low interest among health practitioners, and the amount of consultation time the health professionals have when compared to the number of clients they are attending to. These possible reasons warrant detailed exploration so that research and evidence-based policies can provide solutions to this identified gap.

The implications of not having many health professionals who have good knowledge of nutrition education could mean that clients or patients who need the services will miss the opportunity of being screened or counselled for one nutrition-related disease or another. They will miss the opportunity of holistic care, which should be part of health promotion. This contrasts with the study carried out in Tanzania where health workers had good knowledge of nutrition, scoring 55-65% [13]. However, that study was carried out in a single unit (renal unit) of the health facilities, and a different questionnaire, other than the general nutrition knowledge questionnaire, was used.

Although respondents perceived providing nutrition education as a strategy in patient management to be their role and part of routine appointments, only about 58.9% felt competent in addressing nutrition-related issues. This finding is consistent with results from Australia among general practitioners, where feeling incompetent limited their capacity to provide nutrition education [14]. It is possible that the general practitioners were not taught nutrition, or in-service nutrition training was not included in their practice, which may have led to the similarity in findings of both studies. The study carried out in Tanzania reported a contrary result, with nurses declining nutrition education and counselling as their responsibility [13]. Even though in this study, most respondents believed nutrition education is effective in the prevention of diseases, this did not translate to effectively delivering this service to clients who need them. This contrasts with the findings in another study carried out in Ghana [15]. Doctors doubted the effectiveness of nutrition education for patients. They must have felt incompetent in delivering nutrition education to their patients and thus questioned the efficacy of what they would offer.

In this study, the amount of time dedicated to nutrition was limited, despite the fact that no health professional used information leaflets or pictures to relay nutritional messages to patients. This was a similar finding in studies done in Saudi Arabia; however, respondents in Saudi Arabia used information leaflets to convey nutritional information [16]. Also, in the current study, nutritional information was rarely given in the case of physiotherapists. This was also revealed in a study carried out in South-east Nigeria, where physiotherapists only provided nutrition education opportunistically [17]. The inability of health professionals in this study to allocate more time to nutrition education of patients could be due to pressure at work, poor nutrition knowledge, and poor understanding of the need for nutrition education for each patient seen.

Although some respondents practice nutrition education, the majority of them do not use the Nigerian food-based dietary guidelines for nutritional education of patients. This is consistent with the finding in the study carried out in Tanzania [14]. This could be because of greater dependence on personal capabilities in professionalism or on assumed knowledge of nutrition since patients trust them and expect nutritional guidance. Generally, health professionals' competencies in nutrition education are inadequate.

From the results of our study, respondents with postgraduate-level training were four times as likely to demonstrate competency in nutrition education compared to those with a diploma. This suggests that a higher level of training is necessary for health professionals to acquire knowledge about nutrition, develop a positive perception of the effectiveness of nutrition education, and practice nutrition education

effectively. A study in Saudi Arabia concluded that having a higher professional qualification was a major contributor to physicians' competence in providing nutrition education to patients [18]. A systematic review conducted on health workers' nutrition knowledge showed improvement after training and concluded that in-service nutrition training interventions could bridge the gap created by incompetency in nutrition education among health professionals [19]. Respondents who were physiotherapists were 17 times more likely to demonstrate competency in nutrition education compared to dietitians. However, a study carried out in south-east Nigeria on physiotherapists revealed a different finding: they only assessed and educated patients on nutrition opportunistically [17]. The current finding in our study supports an improvement in their competencies in nutrition education with further training.

Results from our study showed that age has a relationship with the ability to practice nutrition education. In a regression analysis, those who were ≤ 39 years were five times more likely to demonstrate competency in nutrition education compared to those who were ≥ 50 years. It could be that respondents of this age group were more proactive in improving their competencies in nutrition education. However, a study on healthcare providers' prenatal nutrition education showed older respondents ≥ 50 years were more competent [20]. The latter study only included nurses and midwives as respondents, and it could be that they were all experienced in prenatal care or had received further training on prenatal nutrition education.

Limitations of the Study

The data from the health facility-based study may not be representative of the locality, as individuals with diet-related chronic diseases who did not visit those facilities were excluded. There may be a need for a qualitative approach to the research focus for better exploration. The results of such a qualitative assessment may be useful in designing interventions to improve the nutrition education competencies of health professionals.

Conclusion

The proportion of health professionals with adequate competency in nutrition education was poor. The majority of these health professionals still felt they needed more training on nutrition for proper delivery of nutrition education. There is a need for emphasis on nutrition and nutrition education in the respective training schools of health professionals. The incorporation of regular in-service training could be a promising strategy for improving health professionals' nutritional competency.

Conflict of Interest

The authors declare no conflict of interest.

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