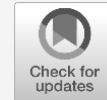






Original Research

The nutritional knowledge of nurses working at the medical college hospital in the northern district of Bangladesh: A cross-sectional study



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Abstract

Background: Nutrition significantly impacts disease prevention and patient recovery. As healthcare providers across various health sectors, nurses often have the opportunity to offer dietary guidance to patients. However, there is a dearth of studies in the literature that assess nurses' nutritional knowledge in Bangladesh.

Objective: This study aimed to determine the nutritional knowledge of nurses employed at a tertiary-level medical college hospital in the Dinajpur district of Bangladesh.

Methods: An observational descriptive cross-sectional study design was employed, with 109 staff nurses completing a self-administered questionnaire.

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This questionnaire covered demographic characteristics, work-related information, and 20 multiple-choice questions (MCQs) aimed at assessing nurses' nutrition knowledge. Data were collected between April and May 2022. Statistical analyses included descriptive statistics, chi-square (χ^2) tests, and one-way analysis of variance (ANOVA).

Results: The average score of nutrition knowledge was 63.4% (SD = 13.94) for all nurses, falling within the low to moderate range. Nurses with a Bachelor's degree in nursing (22.2%) and 11 - 15 years of work experience (14.7%) demonstrated a very good level of nutrition knowledge. Education level ($\chi^2 = 18.659$; $p < 0.05$) and work experience ($\chi^2 = 22.356$; $p < 0.01$) significantly influenced knowledge levels. Most nurses sought nutritional advice from less than 25% of patients, with doctors/physicians being the most common source of nutrition information provided by nurses.

Conclusion: The average nutritional knowledge score of Bangladeshi nurses was low to moderate. Education level and length of work experience significantly impacted knowledge levels. Therefore, it is recommended that effective ongoing nutrition education programs, nursing curriculum reforms, and in-service training are crucial to enhancing nurses' nutritional knowledge.

Keywords

Bangladesh; hospital; nutrition; knowledge; nursing staff; health personnel

Background

Nutrition is crucial in preventing disease, treating chronic conditions, promoting health, and extending a healthy lifespan, all of which are well recognized (Schaller & James, 2005). Several developing countries, like Bangladesh, currently grapple with issues such as overweight, obesity, underweight (in some cases), stunting, wasting, childhood mortality, and morbidity, constituting a public health nutrition problem (Rahman et al., 2014). The primary cause of malnutrition often stems from inadequate nutritional practices due to a lack of nutritional knowledge (Mowe et al., 2008; Persenius et al., 2008).

Specialized dietitians and nutritionists typically provide nutritional information to patients in hospitals (Gibbons et al., 2000). However, in developing countries like Bangladesh, the position of dietitian often remains unfilled in most hospitals. As a result, doctors and nurses take on the additional responsibility of educating patients about nutrition (Ozcelyk et al., 2007). Currently, the nation has only one registered doctor per 1847 individuals (Financial Express, 2018). Consequently, doctors often don't address patients' nutrition-related issues separately, leading nurses to become the primary source

of nutrition information. Given their presence across various sectors of the healthcare system, nurses can easily provide valuable nutrition information to patients (Mowe et al., 2008).

Nutrition is not considered a fundamental or optional subject; instead, it is only included as a segment of the student nurse curricula in Bangladesh. In the Bachelor of Nursing and Diploma in Nursing degree programs, students are expected to cover 80 hours of general nutrition education. However, this requirement is not fully met academically, and the shortfall is even more pronounced in the case of the Diploma in Nursing degree program (Bangladesh Nursing and Midwifery Council, 2018). Nutrition courses in both degree programs aim to familiarize students with the concept of nutrition in relation to health and well-being. Additionally, the biochemistry course covers topics such as food components, carbohydrates, protein, and lipid metabolism (Bangladesh Nursing and Midwifery Council, 2018). The clinical practice sessions, totaling thirty-two hours, provide a practical application of nutritional concepts, including assessing a patient's nutritional status and dietary history and establishing therapeutic goals, among other aspects (Bangladesh Nursing and Midwifery Council, 2018).

As nurses study nutrition as a minor component within a broader curriculum, it suggests a potential lack of nutrition knowledge among them. Additionally, nutrition training at the undergraduate level is limited. Numerous studies from various countries have highlighted low knowledge scores on nutrition among both students and registered nurses (Kgaphola et al., 1997; Schaller & James, 2005; Warber et al., 2000; Yalcin et al., 2013).

The nutritional knowledge status of registered nurses practicing in Bangladesh remains unknown due to the absence of published data. Reports indicate insufficient nutrition knowledge among nurses. Considering the crucial role of nutritional care in life quality and health, it becomes essential to assess the extent of nurses' knowledge about nutrition. This assessment aims to recommend improvements in nursing curricula, practice, and training. Despite our literature review, there has not been an evaluation of the nutritional knowledge of nurse practitioners in this country. Therefore, this study aimed to investigate the nutritional knowledge level among Bangladeshi nurses.

Methods

Study Design

An observational cross-sectional design was employed in this study.

Samples/Participants

The participants in this study comprised registered staff nurses working at the M. Abdur Rahim Medical College Hospital, a tertiary-level district public hospital in Dinajpur-5200, Bangladesh. These participants had completed either a four-year undergraduate degree or a three-year diploma and were registered by the Bangladesh Nursing and Midwifery Council through a written examination. The nursing supervisor and matron compiled a list of all potential participants, amounting to a total of 355 nursing staff. The Raosoft calculator program was used to determine the sample size (Raosoft, 2004). With 355 nurses considered, we applied a 95% confidence interval, a 5% acceptable margin of error, and assumed a response distribution rate of 50%. The calculated sample size was 185. However, we opted for a final sample size of 203 to account for non-responders, increasing the size by 10%.

Instruments

Data were collected using a previously validated and reliable instrument (questionnaire) found in the literature, specifically designed to assess the nutritional knowledge of nurses. The instrument, originally developed by Lindseth (1990, 1994, 1997); Ozcelyk et al. (2007), underwent slight modifications for the purposes of this study. The validity and reliability of the instrument had been previously examined in studies by Lindseth (1990, 1994, 1997); Ozcelyk et al. (2007). Although the authors of the original instrument had granted permission for anyone to use its content, either partially or entirely, and modify it for non-commercial research or educational purposes, formal permission was sought through email communication. Modifications were made to the existing instrument to account for cultural differences, incorporating acceptable terminology and ensuring the relevance of questions to the Bangladeshi context, as long as these modifications did not alter the item's meaning (Mueller, 1986). Examples of modifications included changing "alcohol" to "soft drinks," "ice-cream" to "ripened fruit/fruit juice," "eating a lot of grapefruit" to "eating a lot of fruits and vegetables," and converting "pounds" to "kilograms." The original instrument was in English, and since the respondents in this study were educated, no translation was necessary.

A panel of five experienced experts in the field, all members of the Bangladesh Academy of Dietetics & Nutrition, examined the content validity, face validity, and reliability of the questionnaire. They were tasked with evaluating whether the questions seemed reasonable, effectively covering pertinent and essential data with clarity. Minor changes were made based on their feedback. The revised questionnaire underwent pilot testing with ten nurses from the same area who

were not involved in the study. Their input helped assess the questionnaire's applicability, clarity, and ease of use, leading to further revisions.

The final questionnaire comprised two sections. The first section gathered information on general demographic characteristics, educational background, practice, and work-related details. The second section consisted of 20 multiple-choice questions to evaluate nurses' nutritional knowledge. These questions included various nutrition subject groups, covering topics such as food and nutrition basics, principles, the impact of diet and food on diseases, nutrition throughout the life cycle, nutritional assessment, and nutritional support.

Data Collection

Data were collected between April and May 2022. Participants were provided with questionnaires along with an informative cover letter enclosed in an envelope. They were instructed to write their answers on the questionnaire, which was later collected. In the nutrition knowledge section, each question presented three choices. A correct answer was assigned 1 point, and the nutrition knowledge level was assessed out of a total of 20 points. The scoring criteria for levels of nutrition knowledge were as follows: 17 - 20 points (very good); 13 - 16 points (good); 9 - 12 points (adequate); and 8 points and below (inadequate).

Data Analysis

For analysis, the data were imported into the SPSS software (Version 20, SPSS Inc., Chicago, USA) program for Windows. Descriptive statistics were employed to describe demographic characteristics and knowledge scores. Statistical analyses included the chi-square (χ^2) significance test and one-way analysis of variance (ANOVA). A p-value less than 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was granted by both the University of Rajshahi, Bangladesh and the Ethical Approval Committee of M. Abdur Rahim Medical College Hospital (Memo No - EACMN/32/107). Official permission for data collection was sought through an application from the Director of the hospital mentioned above. Prior to data collection, consent was obtained from nursing supervisors and participants. The privacy and anonymity of the subjects were carefully ensured, with participants identified using codes. They were assured of the freedom to withdraw from the study without facing any penalties. Additionally, participants were informed that the collected data would be used solely for research purposes.

Results

Participants' Characteristics

A total of 109 functional questionnaires were received out of the 203 samples, resulting in a response rate of 53.69%. The respondents had an average age of 30.47 ± 7.99 , with the majority (47.7%) falling from 19 to 28 years. Over 76% of the respondents held a Diploma in Nursing Science degree, while 8.3% possessed a B. Sc. in Nursing Science degree (the baseline degree for registered nurses in Bangladesh). Additionally, 13.8% of the respondents had completed a post-basic diploma degree, a special professional degree for diploma undergraduates. The mean length of working experience was 10.61 ± 3.51 , and the majority of the nurses (56.9%) had been working as registered nurses for 6 to 10 years (Table 1).

Table 1 Socio-demographic information of the respondents (N = 109)

| Variable and categories | n (%) |
|---|-----------|
| Age (years) [Mean = 30.47, SD = 7.99] | |
| 19 - 28 | 52 (47.7) |
| 29 - 38 | 42 (38.5) |
| 39 - 48 | 11 (10.1) |
| 49 - 58 | 4 (3.7) |
| Education level | |
| Diploma in Nursing Science & Midwifery | 83 (76.1) |
| B. Sc. In Nursing | 9 (8.3) |
| B. Sc. In Nursing (Post Basic) | 15 (13.8) |
| Public Health Masters | 2 (1.8) |
| Working experience (years) [Mean = 10.61, SD = 3.51] | |
| 0 - 5 | 1 (0.9) |
| 6 - 10 | 62 (56.9) |
| 11 - 15 | 34 (31.2) |
| 16 - 20 | 12 (11.0) |

Nutritional Knowledge of Participants

Table 2 displays questions in abbreviated form, correct answers, and correct response percentages. Participants had better performance on specific questions. For instance, over 99% of respondents were aware that animal protein increases HDL cholesterol levels in the blood. A significant majority of nurses (93.6%) correctly identified amino acids as the building blocks of protein. Additionally, over 91% of the nurses accurately responded that the ideal weight gain for the typical pregnant woman is between 11 and 14 kg. More than 89% of respondents highlighted the role of calcium phosphate in the formation of bones and teeth.

Moreover, 89% of the participants in this study indicated that increasing physical activity and decreasing food intake is the best way to lose weight. Also, 86.2% of nurses correctly identified 1800-2400 Kcal as an adult's daily average energy requirement. Over 81% of nurses were knowledgeable about which vitamin dissolves in water. When asked about the food group with a protective

effect against various cancers, 78% of respondents accurately identified fruits and vegetables. Furthermore, 78% of nurses answered that folate has a role in preventing neural tube defects.

Table 2 Questions in abbreviated form, correct answers, and correct response percentages

| Questions in abbreviated form | Correct answers | Correct response (%) |
|--|--|----------------------|
| 1. The building block of protein | Amino acid | 102 (93.6) |
| 2. Vitamin that dissolves in water | Vitamin C | 89 (81.7) |
| 3. The absorption of iron is facilitated by | Vitamin C | 47 (43.1) |
| 4. Mineral which has a role in the formation of bones and teeth | Calcium phosphate | 98 (89.9) |
| 5. An adult person's daily average energy requirement | 1800-2400 Kcal | 94 (86.2) |
| 6. The nutrient which has a preventive effect on high blood pressure | Potassium | 55 (50.5) |
| 7. Food that increases the level of HDL cholesterol in the blood | Animal protein | 108 (99.1) |
| 8. The food group that has a protective effect on various cancer | Fruits & vegetables | 85 (78.0) |
| 9. Calories released from 1 gm of carbohydrate | 4 kcal | 40 (36.7) |
| 10. The antioxidant which protects the body from cancer | Vitamin E | 7(6.4) |
| 11. The food whose glycemic index is the lowest | Puffed rice/ muri/ chira | 66 (60.6) |
| 12. Nutritional status of a person whose BMI is 25 - 29.99 kg/m2 | Overweight | 53 (48.6) |
| 13. The best way to lose weight | Increasing physical activity and decreasing food intake | 97 (89.0) |
| 14. The groups who are at risk of malnutrition in the community | Adolescents, under the age of five, old and pregnant women | 35 (32.1) |
| 15. The nutrient associates the protection of neural tube defect | Folate | 85 (78.0) |
| 16. Vitamin C is not engaged in | Muscle contraction | 75 (68.8) |
| 17. The Rich source of calcium | Milk & Yogurt, dried fish | 80 (73.4) |
| 18. The minerals most often deficit in the regular diet | Calcium, iodine, iron | 62 (56.9) |
| 19. Ideal weight increase for the typical pregnant women | 11 - 14 kg | 100 (91.7) |
| 20. Principles of a balanced diet | Eating food selected from all four food groups | 10 (9.2) |

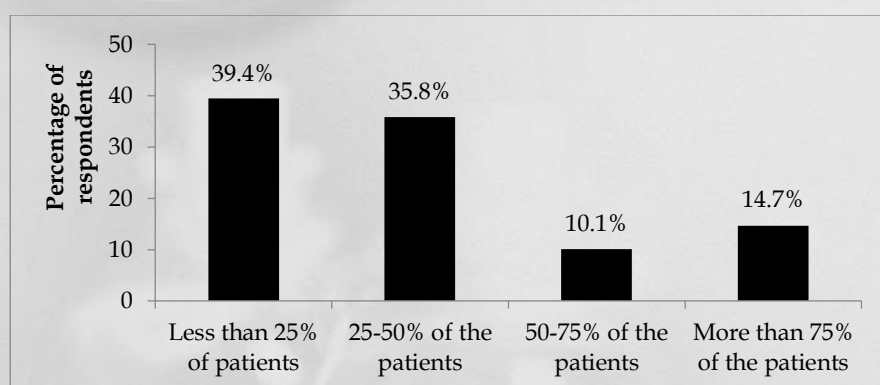


Figure 1 Nurses were asked for nutritional or dietary advice by the patients

In the current study, it was found that 39.4% (n = 43) of nurses were questioned for nutrition or dietary advice by a minimum number of patients (<25% of patients). Additionally, only 14.7% (n = 16) of nurses were sought out for nutrition or dietary advice by a maximum number of patients (>75% of patients) (Figure 1).

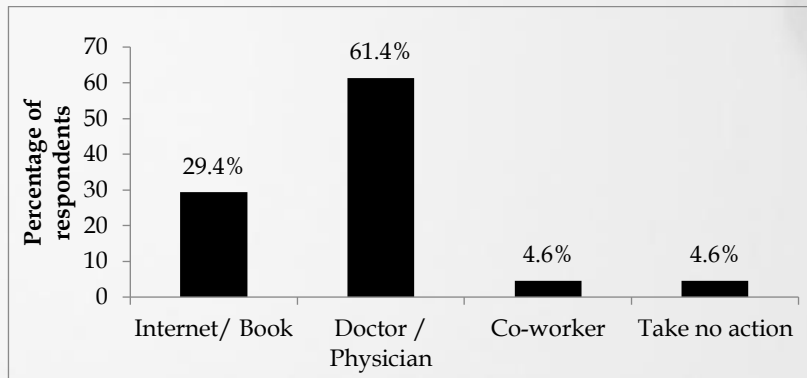


Figure 2 Where do they go for help when a problem arises in giving nutritional or dietary advice to patients?

Respondents who encountered difficulties providing nutrition advice sought assistance from various resources – this question aimed to identify the resources used by participants to seek help. The study observed that approximately 61.4% of nurses preferred consulting with a doctor or physician working in their area for nutrition-related information. About 29.4% relied on websites or books as sources of nutrition data. Additionally, a few nurses ($n = 5$) opted to consult with colleagues or co-workers. Surprisingly, 4.6% ($n = 5$) did not take any action or seek assistance when faced with nutritional complications in practice (Figure 2).

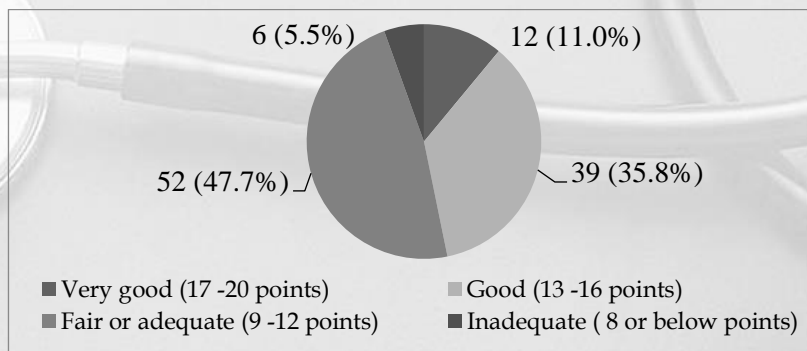


Figure 3 Nutritional knowledge levels of respondents

The answers to the nutrition knowledge questions were then analyzed and assessed based on the scoring method. Figure 3 illustrates the respondents' nutritional knowledge levels following scoring. The results indicated that only 11.0% of nurses achieved a level categorized as "very good" (17 - 20 points), 35.8% achieved a "good" level (13 - 16 points), 47.7% demonstrated an "adequate" level (9 - 12 points), and 5.5% showed an "inadequate" level (8 points or below) (Figure 3).

The overall average nutritional knowledge score among all nurses was 12.68 ± 2.78 out of 20 points (the highest possible score). The range of scores varied from a minimum of 7 to a maximum of 18 points. Specifically, six nurses obtained the highest score (18 points), while two achieved the lowest (7 points). Figure 4

shows the respondents' knowledge scores as a percentage. According to these findings, all respondents' mean overall nutritional knowledge score stood at 63.4% (SD = 13.94).

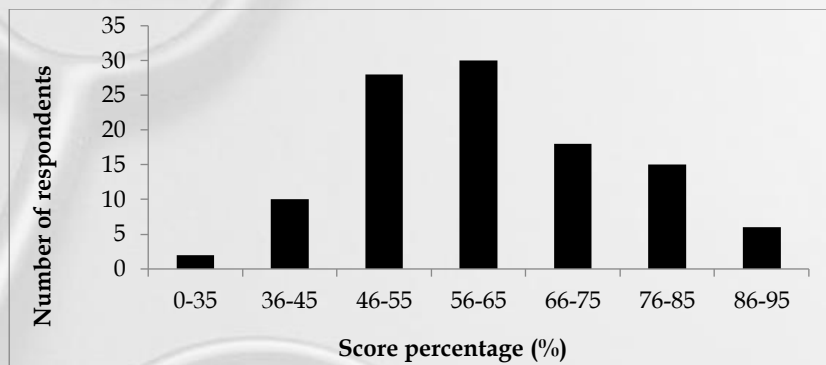


Figure 4 Respondents' knowledge scores as percentage

Table 3 displays the nurses' nutrition knowledge levels categorized by explanatory variables. The results indicate that the highest rates of "very good" and "good" knowledge levels were observed in the 29 - 38 years age group (16.7% and 45.2%), among those holding a diploma in nursing science and midwifery degree (9.6% and 34.9%), and among individuals with a working experience of 6 - 10 years (9.7% and 30.6%). The study revealed a statistically significant relationship between educational level and length of working experience with the nutrition knowledge level of nurses, denoted by $p < 0.05$ and $p < 0.01$, respectively.

Table 3 Nutritional knowledge level of respondents according to age, education, and working experience

| Variables | Knowledge level | | | | Statistics |
|--|----------------------|-----------|-----------|------------|---|
| | Very good | Good | Adequate | Inadequate | |
| Age (years) | | | | | |
| 19 - 28 | 4 (7.7) ^s | 15 (28.8) | 29 (55.8) | 4 (7.7) | $\chi^2 = 12.260$ df = 9 $p > 0.05$ |
| 29 - 38 | 7 (16.7) | 19 (45.2) | 16 (38.1) | 0 (0.0) | |
| 39 - 48 | 1 (9.1) | 3 (27.3) | 6 (54.5) | 1 (9.1) | |
| 49 - 58 | 0 (0.0) | 2 (50.0) | 1 (25.0) | 1 (25.0) | |
| Education level | | | | | |
| Diploma in Nursing Science & Midwifery | 8 (9.6) | 29 (34.9) | 42 (50.6) | 4 (4.8) | $\chi^2 = 18.659$ df = 9 $p < 0.05$ |
| B. Sc. In Nursing | 2 (22.2) | 5 (55.6) | 2 (22.2) | 0 (0.0) | |
| B. Sc. In Nursing (Post Basic) | 2 (13.3) | 4 (26.7) | 7 (46.7) | 2 (13.3) | |
| Public Health Masters | 0 (0.0) | 1 (50.0) | 1 (50.0) | 0 (0.0) | |
| Working experience (years) | | | | | |
| 0 - 5 | 0 (0.0) | 0 (0.0) | 1 (100) | 0 (0.0) | $\chi^2 = 22.356$ df = 9 $p < 0.01$ |
| 6 - 10 | 6 (9.7) | 19 (30.6) | 33 (53.2) | 4 (6.5) | |
| 11 - 15 | 5 (14.7) | 15 (44.1) | 14 (41.2) | 0 (0.0) | |
| 16 - 20 | 1 (8.3) | 5 (41.7) | 4 (33.3) | 2 (16.7) | |
| Total | 12 (11.0) | 39 (35.8) | 52 (47.7) | 6 (5.5) | |

^s, Results expressed as number (percentage)

Discussion

The current study investigated the nutritional knowledge level of staff nurses at a tertiary medical college hospital in the Dinajpur district of Bangladesh. The study revealed that the mean overall score of nutritional knowledge obtained was 63.4% (SD = 13.94). Most research on nurses' nutrition knowledge has been conducted in countries like the United States, Australia, Turkey, and South Africa. For instance, a previous study on 44 northwestern American registered nurses reported a mean score of 65% (SD = 11) and suggested more nutrition education programs in deficient areas (Crogan et al., 2001). In three earlier studies conducted at North American rural hospitals among community/public health nurses, geriatric nurses, and graduate nurses, Lindseth (1990, 1994, 1997) reported a mean score of 65% (SD = 6). Lindseth's studies indicated that community/public health nurses had the highest knowledge score (Mean score 68%, SD = 4.9), whereas nurses working in acute medical/surgical hospitals had the lowest score (Mean score 60%, SD = 7). This score was slightly higher compared to the present study. The reason behind this difference might be that American nurses are expected to undertake more dietetic tasks than Bangladeshi nurses, and overall, the nursing education program in America supports nurses in acquiring nutrition education.

Schaller and James (2005) demonstrated that Australian nurses had a low to moderate level of knowledge in nutrition, reporting an average score of 60.2% (SD = 8.4). Yalcin et al. (2013) reported a mean general nutrition knowledge score of 49.44% (SD = 10.95) for Turkish public hospital nurses and recommended a more systematic continuing education program on clinical nutrition to help nurses stay updated in nutritional knowledge. Another study on 260 nurses in Turkey, using a similar instrument as our study on Bangladeshi nurses, reported an average score of 11.37 (SD = 2.15) and a correct response rate of 56.75% (SD = 10.84) (Ozcelyk et al., 2007). Warber et al. (2000) reported an average nutrition knowledge test score of 66% (SD = 8) among 68 adult and family nurse practitioners. Similarly, a study assessing the nutritional knowledge of 99 South African nurses using a 40-item multiple-choice questionnaire reported insufficient knowledge (Kgaphola et al., 1997). Based on the results of previous research, the average knowledge score of Bangladeshi nurses at 63.4% could be considered low to moderate. This outcome might be attributed to the lack of education on nutrition in nursing programs and the need for additional nutrition topics in nursing curricula (Kowanko et al., 1999; Yalcin et al., 2013). Few nursing colleges offer a limited number of nutrition courses in their curriculum, indicating negligence toward nutrition education in these institutions. It is

evident that without a solid knowledge foundation, nurses struggle to provide adequate nutritional care (Kowanko et al., 1999).

Interestingly, Bangladeshi nurses scored higher than their Turkish counterparts despite using a similar instrument. However, the nutritional knowledge score in both studies was considered low to moderate. The consistency in the results of current and previous studies suggests that this modified measuring instrument is valid and reliable and yields consistent outcomes.

Despite our efforts to present the components of the measuring instrument in an understandable manner for respondents, some individuals appended additional comments at the end of the questionnaire. It is plausible that a few questions posed a difficulty, requiring extra focus and a comprehensive understanding of nutrient properties, food biochemistry, nutritional assessment, and diet planning. Nurse participants expressed a belief that in-depth nutritional knowledge was unnecessary due to easy access to physicians or dietitians. However, it appears that nurses would benefit from extensive knowledge across various aspects of general and clinical nutrition to achieve a satisfactory score using the questionnaire utilized in this study.

The level of education, years of working experience, and the complexity and relevance of the instrument's content all played a role in the total knowledge score evaluated in this study. These factors might explain some disparities between the current research and previous investigations.

Long-term working experience might influence knowledge acquisition. Generally, nurses with more years of practice might have a broader scope for acquiring knowledge through experience compared to those with fewer years. However, Yalcin et al. (2013) reported no difference in clinical nutrition knowledge levels between nurses with four years and those with twenty years of experience. This highlights the significance of clinical nutrition education over traditional clinical expertise. In this study, we identified a statistically significant relationship ($p < 0.01$) between the length of working experience and the nutritional knowledge level of nurses. Nurses with 11 - 15 years or more experience displayed a higher mean score (13.29, SD = 2.74) compared to those with lesser experience (<11 years). The length of working experience also showed significance in previous studies (Ozcelyk et al., 2007). Schaller and James (2005) noted substantially higher mean knowledge scores among nurses practicing for over ten years than those practicing for ten years or less.

Nurses holding a B.Sc. in Nursing Science degree achieved higher mean scores (14.33, SD = 2.06) than those with other nursing degrees. A significant relationship between education level and knowledge level ($p < 0.05$) was

observed in the current study. This finding aligns with [Crogan et al. \(2001\)](#) and [Yalcin et al. \(2013\)](#), indicating that nurses with higher degrees perform better than those with certificates. However, this contradicts the findings of [Schaller and James \(2005\)](#).

In the current study, we did not observe any significant ($p > 0.05$) impact of age on knowledge levels. This emphasizes that nurses acquire nutritional knowledge primarily through institutional education and working experience. Due to their extensive work experience, senior nurses might adopt a more comprehensive approach to addressing health concerns and preventing chronic diseases. This finding contrasts with the results of [Schaller and James \(2005\)](#), who identified a relationship between increased knowledge and age.

Among the sources of nutrition-related information mentioned by nurses in this study, doctors or physicians were the most frequently cited (61.4%). This might reflect the common scenario where nurses typically work in settings with full-time medical staff. In Bangladesh, most hospitals lack nutritionist positions, leading doctors or physicians to serve as the primary sources of nutrition information for nurses in these institutions. The availability and accessibility of doctors and physicians in nurses' work areas might be another significant reason for their selection as sources of information. About 5% of nurses identified their colleagues as sources of information, raising potential concerns about the accuracy and validity of the information shared among coworkers. Approximately 29.4% of nurses in this study mentioned the Internet and books as sources of nutrition knowledge. According to [Warber et al. \(2000\)](#), journals were the primary source of nutrition information for nurses (59%), while lay media were used by 21% of nurse practitioners. There is limited research evidence from Bangladesh regarding how nurses acquire nutrition information. In Australia, [Schaller and James \(2005\)](#) reported that 85% of nurses utilized dietitians, 25% consulted doctors, 13% relied on the Internet, and only 5% sought guidance from general practitioners for nutrition-related information.

Just over 39% of respondents reported receiving requests for nutritional advice from less than 25% of patients, while nearly 36% of nurses stated they received requests from a maximum of 50% of patients. Nurses in various fields of the health sector are comparatively available and easily accessible to patients, likely explaining the frequency of requests for nutrition information. A distinct scenario was observed in Australia, where nearly 90% of nurses reported receiving requests for nutritional information from patients ([Schaller & James, 2005](#)). Conversely, only 14.7% of nurses in the current study received requests from more patients (>75% of patients) for nutritional advice. This suggests that Australian patients might express greater concern about nutrition-related aspects than those in South Asian countries.

Limitations

The components, length, and complexity of the instrument (questionnaire) were crucial for respondents, as they can impact the understanding of content and the provision of responses. A limitation of the present study is the small size of the sample. The sample size in the current study was sufficient for evaluating the frequency of nutritional knowledge through statistical power but inadequate for conducting regression analysis (Cohen, 1988). Another limitation of this study was the low response rate. Various factors may have influenced the response rate, including the respondents' interest in the topic, required time, pre-contact, length of the questionnaire, incentives for responding, number and timing of reminders, timing, and method of distribution and collection of the questionnaire, etc. There is a possibility that among the total sample, those who responded might possess more knowledge of nutrition than those who did not, potentially resulting in an overestimation of the mean score.

Conclusion

Nurses play a significant role in educating patients about nutritional aspects in the healthcare sector. Consequently, nurses should comprehensively understand essential nutrition relevant to their field of practice. Nutrition education in Bangladesh is currently limited to basic nutrition teaching, typically consisting of one or two courses on nutrition in nursing colleges. To ensure that nurses are equipped with adequate qualifications in this subject, it is essential to revise and update nursing curricula based on the current number of nutrition courses, the quantity of nutrition topics in the syllabus, and the professional demands for nutrition knowledge levels. Academicians should prioritize the design of appropriate clinical nutrition courses, emphasizing the clinical application of nutrition knowledge and patient care. Institutions should consider initiating postgraduate programs in public and private universities specifically targeting nursing students. Following the completion of basic education according to the new syllabus, institutions should work towards concluding education with a postgraduate degree. To further enhance the nutrition knowledge of nurses, providing training at specific intervals during their service period would be beneficial.

Additionally, assessing the expertise in nutrition of other professionals who offer nutrition advice, such as physicians, paramedics, occupational therapists, and physiotherapists, could be advantageous. Finally, the study has revealed that the mean nutritional knowledge score of nurses working in this country was 63.4%, which can be considered poor to moderate. Therefore, it is crucial to

reform nursing curricula, provide educational support on nutrition at the graduate and postgraduate levels, and implement in-service training to address this deficiency.

Declaration of Conflicting Interest

The authors declared no conflict of interest, financial or otherwise.

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Authors' Contributions

All authors significantly contributed from conceptualization to the finalization of the study. MSAR: Conceptualization, study design, analysis and interpretation of data, manuscript writing. MAR: Literature review, data curation, and input. MAK: Data collection, data analysis. VB: Literature review, Data collection. AR: Data analysis and interpretation of data, manuscript writing, software. MAA: Manuscript writing, reviewing, and editing grammatical errors. NA: Data curation, manuscript writing. HBH: Designing the questionnaire, data collection, revising, and editing the article for important intellectual content. SSA: Data collection, data curation. All the authors reviewed and approved the final version of the manuscript and agreed to submit the article to the current journal.

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Data Availability Statement

The authors ensure that the necessary data supporting the study findings are included in the article. Raw data were available upon request to the corresponding author.

Declaration of the Use of AI in Scientific Writing

None declared.

References

- Bangladesh Nursing and Midwifery Council. (2018). *Nursing and midwifery education: Curricula*. Bangladesh Nursing and Midwifery Council. <http://www.bnmc.gov.bd/site/page/d1633bd9-c9f8-4bd9-acb3-e7c26186de4c/->
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: Routledge.
- Croghan, N. L., Shultz, J. A., & Massey, L. K. (2001). Nutrition knowledge of nurses in long-term care facilities. *Journal of Continuing Education in Nursing*, 32(4), 171-176. <https://doi.org/10.3928/0022-0124-20010701-08>
- Financial Express. (2018). *Bangladesh has one doctor for every 1847 people*. <https://thefinancialexpress.com.bd/health/bangladesh-has-one-doctor-for-every-1847-people-1519053209>
- Gibbons, K., Graham, V., Marraffa, C., & Henry, L. (2000). 'Filling the Gap'-children aged between two and four years: Sources of nutrition information used by families and childcare staff. *Australian Journal of Nutrition and Dietetics*, 57(4), 208-214.

- Kgaphola, M. S., Wodarski, L. A., & Garrison, M. B. (1997). Nutrition knowledge of clinic nurses in Lebowa, South Africa: implications for nutrition services delivery. *Journal of Human Nutrition and Dietetics*, 10(5), 295-303. <https://doi.org/10.1046/j.1365-277X.1997.00063.x>
- Kowanko, I., Simon, S., & Wood, J. (1999). Nutritional care of the patient: nurses' knowledge and attitudes in an acute care setting. *Journal of Clinical Nursing*, 8(2), 217-224.
- Lindseth, G. (1990). Evaluating rural nurses for preparation in implementing nutrition interventions. *The Journal of Rural Health*, 6(3), 231-245. <https://doi.org/10.1111/j.1748-0361.1990.tb00664.x>
- Lindseth, G. (1994). Nutrition preparation and the geriatric nurse. *Western Journal of Nursing Research*, 16(6), 692-703. <https://doi.org/10.1177/019394599401600607>
- Lindseth, G. (1997). Factors affecting graduating nurses' nutritional knowledge: implications for continuing education. *The Journal of Continuing Education in Nursing*, 28(6), 245-251. <https://doi.org/10.3928/0022-0124-19971101-04>
- Mowe, M., Bosaeus, I., Rasmussen, H. H., Kondrup, J., Unosson, M., Rothenberg, E., & Irtun, Ø. (2008). Insufficient nutritional knowledge among health care workers? *Clinical Nutrition*, 27(2), 196-202. <https://doi.org/10.1016/j.clnu.2007.10.014>
- Mueller, D. J. (1986). *Measuring social attitudes: A handbook for researchers and practitioners*. New York: Teachers College Press.
- Ozcelyk, A. O., Surucuoglu, M. S., & Akan, L. S. (2007). Nutrition knowledge level of nurses in Turkey: Ankara as an example. *Pakistan Journal of Social Sciences*, 4(3), 485-489.
- Persenius, M. W., Hall-Lord, M. L., Bååth, C., & Larsson, B. W. (2008). Assessment and documentation of patients' nutritional status: Perceptions of registered nurses and their chief nurses. *Journal of Clinical Nursing*, 17(16), 2125-2136. <https://doi.org/10.1111/j.1365-2702.2007.02202.x>
- Rahman, M. N., Reza, S. A., Islam, M. A., Rahman, A., & Nath, A. K. (2014). Prevalence of obesity and overweight among English medium school children of Dhaka City in Bangladesh. *Journal of Environmental Science and Natural Resources*, 7(1), 63-67.
- Raosoftware. (2004). *Sample size calculator*. <http://www.raosoftware.com/samplesize.html>
- Schaller, C., & James, E. L. (2005). The nutritional knowledge of Australian nurses. *Nurse Education Today*, 25(5), 405-412. <https://doi.org/10.1016/j.nedt.2005.04.002>
- Warber, J. I., Warber, J. P., & Simone, K. A. (2000). Assessment of general nutrition knowledge of nurse practitioners in New England. *Journal of the Academy of Nutrition and Dietetics*, 100(3), 368-370.
- Yalcin, N., Cihan, A., Gundogdu, H., & Ocakci, A. (2013). Nutrition knowledge level of nurses. *Health Science Journal*, 7(1), 99-108.

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