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Contents

Letter to the Editor

Malnutrition Situation Aspects from Asian Young Dietitians' Perspective

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Dear Editor:

Malnutrition (refer to undernutrition) is public health issue, characterized by lower than z score in children and low body mass index (BMI < 18.5 kg/m^2) in adult. Consequences of malnutrition not only damage individual health, but also poor immunity, delay development and growth, lower IQ in child, reduce quality of life and effect on higher of health care cost.

According to the Young Dietitian Workshop in the Asian Congress of Dietetics (ACD) 2022, we reported Asian situation of malnutrition across public health, health care community, and hospital.

For the public health data, we found that in infant and young children had 21.8% of stunting and 8.9% of wasting, which was improved more than 10% over the past 20 years. Among child and adolescent, the prevalence of thinness was 17.2% and 12.5 % in boys and girls respectively, which quite constancy during 10 years. Food, nutrition insecurity and infection are considered as predisposing factors for malnutrition in children especially in the Covid situation. In some area, school lunch meal may save children from hungry.

Moreover, in some countries happened with other serious problem of nutrition such as anemia. Prevalence of anemia among children in each country was India 53.4%, Pakistan 53.0%, Myanmar 49.6%, Lao PDR 41.4%, Indonesia 38.4%, Thailand 24.9%, Vietnam 22.9%, and Japan 16.7%. Anemia in children may cause from poor intake of dietary or supplement iron and maternal anemia.

Among the Asian adult community, 13.0% of females and 11.5% of males had low BMI. Low BMI healthy adults were more at risk of malnutrition when they got sick. Additionally, when we discussed the issue of a low BMI cutoff point, we found that many low BMI populations still had normal function and health. There was a big question of whether to investigate BMI criteria in Asian populations.

Hospital malnutrition was other setting and aspect of malnutrition. Disease, stress and inflammation also drove on nutrition status of patient consequence to low dietary intake and weight loss, which brought poor outcomes. Nutrition screening tools were used to early detection of malnutrition, which variety across country such as Nutrition Risk Screening (NRS) 2002, Malnutrition Universal Screening Tool (MUST), Mini Nutrition Assessment – short form (MNA-SF), or Subjective Global Assessment (SGA). And some country uses their own development of screening and assessment tools such as Thailand, applying SPENT Screening for screening tools and Nutrition Alert Form (NAF) or Nutrition Triage (NT) as assessment tools.

Prevalence of hospital malnutrition was varied from 20% to 50% depend on the assessment tools and patient characteristics, such as critically ill, cancer, multi-comorbid disease.

Nutrition intervention for hospital malnutrition patient was one of medical treatment demonstrated to improve better outcomes, decrease infection rate and length of stay. Most country has developed their own strategies to improve patients' intake such as modified texture foods, combined traditional Chinese medicine with hospital diet, hospital-made high energy and protein smoothie.

Through our discussion with young dietitians, we shared a lot of useful experiences and knowledge and recognized that there are still many responsibilities and roles of dietitians to be explored and developed especially in the community and hospital nutrition fields. Considering that some Asian countries still suffer from malnutrition. We hope to find an effective way to assess nutrition status as well as prevention and treatment of malnutrition across the lifespan, including patients in hospitals, in order to improve their quality of life.

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Original

Low Physical Activity May Lead to Obesity Rather than High-Energy Intake in Vietnamese Children

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ABSTRACT *Background:* The prevalence of overweight and obesity in Vietnamese school children has increased rapidly in the past decade. However, factors related to this matter in school children were not well understood. *Purpose:* To identify factors related to child obesity in Vietnamese children. *Methods:* A cross-sectional study was conducted on 134 fifth-grade children at a public primary school in a Hanoi suburb. Height and weight were measured. Dietary intake was assessed by a 24-h dietary recall method for seven days. Children were interviewed about daily activities for seven days by questionnaire to estimate physical activity level. *Results:* The study subjects included 73 boys (54.5%) and 61 girls (45.5%). The prevalence of non-obese and obese of all subjects were 69.4%, and 30.6%, respectively. The average energy intake for seven days in non-obese and obese groups was 1895 ± 298 and 1881 ± 296 kcal/d, respectively ($p>0.05$). Sugar intake was similar among all the 4 groups, being less than 30g/day. Physical activity level in the non-obese group was higher than that of the obese group ($p<0.01$). *Conclusion:* This study showed that a high prevalence of obesity was not based on high energy intake but on low physical activity in Vietnamese children.

Keywords: children, overweight and obesity, energy intake, physical activity level.

INTRODUCTION

Childhood obesity is one of the most serious global public health challenges of the 21st century, affecting every country in the world. In just 40 years the number of school-age children and adolescents with obesity has risen more than 10-fold, from 11 million to 124 million (2016 estimates) (1). In Vietnam, childhood obesity has been on a rapid rise and become a public health concern, especially in big cities. In Hanoi, the capital city of Vietnam, the prevalence of overweight and obesity among 8–11 year-olds in 2003 was 7.5%, increasing to 12.9% in 2009 and 33.3% in 2018 (2). In Ho Chi Minh City, the largest city in Vietnam, the prevalence of overweight and obesity in children aged 7-9 and 10-11 years old were 48.2% (3) and 53.5% (4), respectively.

Previous studies reporting on the prevalence of childhood obesity have shown continued increases in obesity during the past decade, with plateauing of obesity prevalence among some age groups. This is a concern as obese children have a higher risk of developing diseases including asthma and type 2 diabetes mellitus and are reported to have low self-esteem (5). Once established, obesity tracks into adulthood and is associated with an increased risk of cardiovascular disease and certain cancers (5). Studies in Vietnam have suggested that obesity increased the risk of hypertriglyceridemia (6). Addressing overweight and obesity will contribute to reducing deaths and increasing the years of life lived (7).

In simple terms, obesity is the result of an energy imbalance. Diet and physical activity, the risk factors most strongly related to obesity, have changed markedly since the onset of the obesity epidemic (5). Interventions that are successful in the prevention and management of childhood obesity are urgently needed. Understanding the relative importance of overconsumption and physical inactivity to excess weight gain among children can contribute to the development and evaluation of interventions and policies to reduce childhood obesity (8). However, whether energy intake or expenditure is the dominant contributor to childhood obesity is a subject of debate. In the United States, the country with the highest rate of overweight and obese children in the world, there has been no consensus on the main driver of secular trends in weight gain among children (8). In addition, population-level studies on the relationship between lifestyles and childhood obesity typically focus on either physical activity or diet but seldom on both (9). Therefore, this study examined physical activity and dietary intake in relation to overweight and obesity in primary school children in a suburb of Hanoi, Vietnam.

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METHODS

Participants

A total of 134 children (73 boys and 61 girls) in grade 5 (9-10 years old) at a public primary school in suburban Hanoi participated in this study. The school was selected by convenience sampling. All data were collected in October 2020. Informed consent was obtained from the children, their guardians, and teachers according to the Declaration of Helsinki, and the study protocol was approved by the Biomedical Research Ethics Committee of Hanoi Medical University (no. 355/HMUIRB).

Anthropometric characteristics

Height and weight were measured to the nearest 0.1 cm and 0.1 kg using a stadiometer (Seca 213) and a digital scale (OMRON HBF354IT). Children were measured with light clothing without shoes or hair ties. All measurements were conducted three times and the mean was calculated. The nutritional status of the children was determined based on the WHO growth reference for those aged 5-19 years old. BMI-for-age z-score was determined using the software WHO AnthroPlus version 1.0.4 for children above five years of age. Interpretation of cut-offs is >+1SD for overweight, >+2SD for obesity, and <-2SD for thinness.

Dietary assessments

Dietary intake was assessed by a 24-hour dietary recall questionnaire for seven days using standard food measures and a food photobook published by the Vietnamese National Institute of Nutrition during interviews to estimate portion size. When children couldn't remember exactly what they had eaten, we contacted the caregiver to reconfirm. The nutritional value of food was calculated based on the Vietnam Food Composition Table published by the Ministry of Health and Vietnam National Nutrition Institute (10). Sugar intake was estimated from reports of various food sugar concentrations (11).

Physical activity assessments

The 7-day minute-by-minute activity record was used to assess the physical activity level. The activity record form is designed based on the template developed by Koebnick et.al (12). Children were instructed to name the activity and the intensity of the activity with 3 levels of light, moderate and vigorous, and mark the start and end times for each activity. The recording method was explained to teachers, children, and their guardians with an example of a completed physical activity form. We asked teachers and guardians to help the children to complete the activity record. When collecting the activity record form, we interviewed children to improve the accuracy of the activity record by adding and correcting the content regarding omissions and unclear points.

Statistical analysis

The physical activity level (PAL) was calculated based on the following formula:

PAL = ∑24h {MET value of physical activity x time (min)} /1440

In which the MET value of physical activity was referenced from the compendium of physical activities of Ainsworth et al. (13).

The time spent in each physical activity intensity in each day was calculated using METs for each participant: average minutes spent in sedentary and light physical activity (METs< 3), moderate to vigorous physical activity (METs ≥3.0).

All statistical analyses were performed using SPSS software (version 26; IBM Corporation, Armonk, New York). The data were expressed as mean±SD or n (%). The study analyses involved comparisons between the non-obese and obese groups. Differences between groups were assessed using independent *t*-tests for continuous data and chi-squared tests for categorical data. *P* values less than 0.05 were defined as a statistical difference.

RESULTS

Figure 1 shows the weight status of all the children. The prevalence of overweight and obesity in children aged 10 years old was very high, at about 30.6%. The prevalence of thinness in children was low at 6% and their average BMI for age z-score was -2.12 SD near the cut-off point of the normal level. Therefore, the following results were presented in the non-obese group consisting of thin and normal children, and the obese group including overweight and obese children.

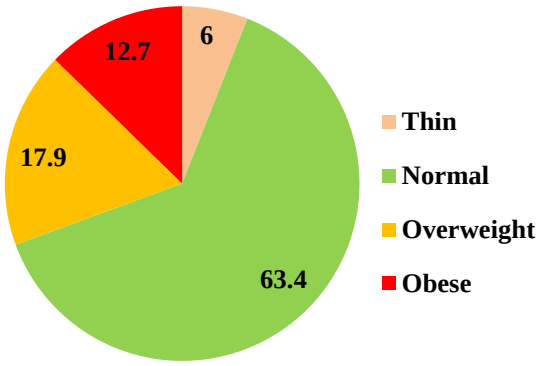

Figure 1. Weight status of children assessed by BMI-for-age z-score (n=134)

Table 1. Characteristics of child subjects (n=134)

	Girls (n=61)	Boys (n=73)	*p*-value†
Age (months)	123.3±3.5	123.0±3.1	0.723
Height (cm)	138.0±5.3	137.9±6.9	0.895
Weight (kg)	32.4±5.7	36.0±8.3	**0.006**
BMI (kg/m^2)	17.0±2.5	18.8±3.4	**0.000**
BMI-for-age z-score	-0.1±1.2	0.7±1.3	**0.000**
Weight status (%)			
Non-obese	78.7	61.6	**0.008**
Obese	21.3	38.4	

Abbreviation: BMI, body mass index.
Values are mean±SD and %. †Independent *t*-test except Chi-squared test for weight status (%). Significant difference: $p<0.05$.

Characteristics of children are summarized in table 1. No statistically significant differences were observed between the boys and girls with regard to age and height. However, the prevalence of overweight and obesity in boys was significantly higher than in girls at 38.4% and 21.3%, respectively ($p=0.008$).

Average energy and nutrient intakes in the 7-day nutritional survey are shown in table 2**.** There were no significant differences between non-obese and obese children in the intakes of energy, protein, lipid intake, fiber, and sugar in both genders. However, the carbohydrate intake of boys was significantly higher in the non-obese group than in the obese group ($p<0.05$).

Table 2. Energy and nutrient intakes by genders and groups (n=134)

	Girls			Boys		
	Non-obese (n=48)	Obese (n=13)	*p*-value	Non-obese (n=45)	Obese (n=28)	*p*-value
Energy intake (kcal/d)	1798±241	1850±209	0.482	1998±321	1896±331	0.197
Protein intake (g/d)	74±23	73±14	0.876	82±24	81±28	0.886
Protein intake (% EI)	16.6±6.0	15.6±1.5	0.596	16.4±3.6	17.2±6.0	0.472
Lipid (g/d)	59±13	62±15	0.544	64±17	64±14	0.996
Lipid intake (% EI)	29.7±4.8	30.1±5.6	0.801	28.6±4.9	30.3±3.9	0.137
Carbohydrate (g/d)	252±38	260±34	0.459	280±45	253±50	**0.021**
Carbohydrate intake (% EI)	56.0±4.6	56.4±5.5	0.794	56.3±5.0	53.5±5.0	**0.023**
Fiber intake (g/d)	3.9±1.4	3.6±1.0	0.583	4.3±1.7	4.2±2.0	0.736
Sugar intake (g/d)	28±16	29±8	0.945	29±17	26±12	0.398

Abbreviation: EI, energy intake
Values are mean±SD and %. *P*-values were computed using an Independent *t*-test with significant difference at $p<0.05$.

Table 3. Physical activity of children with non-obese and obese girls and boys

	Girls			Boys		
	Non-obese (n=48)	Obese (n=13)	*p*-value†	Obese (n=13)	Non-obese (n=48)	*p*-value†
Physical activity level (PAL)	1.44±0.11	1.34±0.12	**0.002**	1.48±0.12	1.41±0.13	**0.018**
Sleeping time (min/d)	622±38	616±40	0.684	618±49	599±46	0.111
Sedentary to light physical activity (min/d)	730±49	763±55	**0.038**	717±67	765±62	**0.003**
Moderate to vigorous physical activity (min/d)	90±38	66±28	**0.044**	108±45	80±31	**0.005**
Percentage of children walking or biking to school (%)	47.9	61.5	0.093	46.7	60.7	0.046
Minutes spent walking or biking to school a day	7±9	9±9	0.513	7±9	6±7	0.743

Values are mean±SD and %.
†Independent *t*-test except Chi-squared test for walking or biking to school (%). Significant difference: $p<0.05$.
PAL was calculated by ∑24h {MET value of physical activity x time (min) } /1440 min. It is the same as the average METs.

Table 3 shows the physical activity of children. The physical activity level in the obese group was significantly lower than in the non-obese group. Obesity children spent more time in sedentary to light activities than non-obese children. Time spent on moderate to vigorous physical activity in obese children was less than in non-obese children. There were no significant differences in sleeping time, the number of children walking or cycling to school, or the time spent walking or cycling between obese children and non-obese children.

Multiple linear regression was used to predict BMI-for-age z-score based on gender, PAL, and energy intake (Table 4). The regression was statistically significant and the three predictors explained 11% of the variance ($R^2 = 0.13$, $F(3, 120) = 6.33$, $p < 0.001$). Participants' predicted BMI-for-age z-score is equal to 1.7688 + 0.8885(GENDER) – 1.8491(PHYSICAL ACTIVITY LEVEL) + 0.0001(ENERGY INTAKE), where gender is coded as 1=girl and 2=boy, physical activity level is measured in PAL and energy intake is measured in kcal. Children's BMI-for-age z-score increased by 0.0001 for each kcal of energy intake and decreased by 1.85 for each PAL of physical activity and BMI-for-age z-score in boys was higher than in girls at 0.89. Gender and physical activity level were significant predictors of BMI-for-age z-score at $p=0.0001$ and $p<0.05$, respectively. It was found that energy intake did not significantly predict BMI-for-age z-score ($p= 0.8513$).

Table 4: Multiple linear regression predicting BMI-for-age z-score of children.

Predictor	Estimate	Standard Error	*t*-statistic	*p*-value
Constant	1.7688	1.2906	1.3705	0.1729
Gender	0.8885	0.2225	3.9935	0.0001
Physical activity level (PAL)	-1.8491	0.8943	-2.0676	0.0407
Energy intake	-0.0001	0.0004	-0.1878	0.8513

$R^2 = 0.13$, $F(3, 120) = 6.33$, $p < 0.001$

Abbreviation: PAL, physical activity level
PAL was calculated by ∑24h {MET value of physical activity x time (min)} /1440 min. It is the same as the average METs.

DISCUSSION

The purpose of the present study was to find related factors of overweight and obesity in children aged 10 years old in Hanoi, Vietnam. We found that in Vietnamese children, the high prevalence of obesity was based not on high energy intake but on low physical activity. Most of the previous trials to control obesity were focused mainly on energy intake such as prevention by reducing/limiting junk foods and sweet foods and beverages (14-15). However, the results of this study suggest that this strategy of obesity control would not be effective in Vietnamese children.

Obesity rate: The mixed obesity rate for girls and boys was about d 31%. These results were similar to data from the National Nutrition Survey in Hanoi in 2018 (2), which showed an obesity rate of 33.3% for 8-10 years old, indicating that our subjects were generally representative of children in Hanoi. The obesity rate is quite high but it is similar to that of most East Asian countries and other parts of the world (26%) (16), with the exception of Japan (17). For Japanese children of a similar age group, the obesity rate was 11% in 2020 (18), which was perhaps the lowest in developed countries for this age.

Accuracy of the results: Results of 24-h dietary recall nutrition surveys are often underestimated because subjects forget some foods that they have eaten, especially with children. Such underestimate problems can be improved with the help of parents (19). Surveys for a full week show more accurate results than surveys for 3 days, which are often used. In this study, the survey was 7 days and children's parents cooperated. Through these efforts, we believe that the reliability of this nutrition survey was greatly improved.

Concerning the accuracy of estimations of physical activity, there may be some limitations. Most of the previous studies in Vietnam were measurements of steps or described activity levels such as low, moderate, and high (4), (20). However such methods do not indicate the PAL. To define PAL more accurately, we used a time/study method. Subjects and their parents wrote down the time in minutes spent in various activities for 7 days. PAL was calculated using the measured time of various activities and metabolic equivalents (METs) (13).

Energy, nutrient, and sugar intakes: The average energy intakes for seven days in the non-obese and obese groups were 1895 ± 298 and 1881 ± 296 kcal/d, respectively ($p>0.05$). Major energy source (carbohydrate, lipid, and protein) intakes were similar in all the groups. The energy ratio for these nutrients (percentages from protein, lipid, and carbohydrate) was 16:30:54, which was similar to that of the Japanese (21). This ratio is consistent with WHO recommendations (22).

In many countries, a high intake of sugar is an important factor for obesity. Some countries put a fine on products with high sugar concentrations (23). In North and South American and European countries, the sugar intake is nearly 100g a day (24-25). WHO recommends energy from sugar at less than 10% and further suggests 5%, which is about 50g or 25g of sugar a day (22). Nowadays, sugar includes not only sucrose but isomerized sugars (fructose and glucose) made from starch is common because it is cheap and tasty at lower temperatures. Luckily, in Vietnam, there is a sugar composition table that includes sucrose, fructose, glucose, and lactose (11). In this study, we used the composition table and calculated sugar intake. It was similar in all groups, being less than 30g/day, which meets the WHO recommendation.

Physical activity: In the present study, the clearest differences between obese and non-obese children were physical activity level (PAL). The multiple linear regression showed the most relevant factor for body weight was PAL with a p-value less than 0.05 (Table 4).

Differences in average PAL per day between the non-obese and obese groups were 0.1 in girls and 0.07 in boys. Since the average basic metabolic rates per day for 10-year girls and boys are 1200 kcal and 1330 kcal, respectively (26), a difference in energy expenditure was 120 kcal/day (1200 kcal x 0.1) in girls and about 90 kcal/day (1330 kcal x 0.07) in boys. Since they are daily differences, it is not small. Such differences were caused by the different amounts of time spent on activities.

Time spent in sedentary to light activities in obese children was about 30 minutes and 50 minutes longer than in non-obese girls and boys, respectively. On the contrary, time spent in moderate to vigorous activity was 25 minutes longer for non-obese girls and boys than for obese ones (Table 3). In Vietnam, parents take children to school by car or motorcycle because traffic makes walking unsafe. It is easy to think that such a lifestyle is one of the major factors in obesity; however, between non-obese and obese children in both genders the time spent commuting to school on foot or bicycle was short and not different (Table 3), indicating that the travel method to and from school is not a major factor in obesity.

Many previous studies have shown that sleep duration is negatively correlated with BMI (27-28). However, in the present study, there was no difference in sleep duration between non-obese and obese children.

Gender difference: Consistent with findings from several previous studies assessing the weight status of Vietnamese children, the prevalence of overweight and obesity in boys was significantly higher than in girls (4), (29-31). The higher prevalence of overweight and obesity in boys could be explained by the different social expectations about weight and body shape for boys and girls (30), (32). In Vietnam, society typically places more importance on males compared to females, resulting in boys being fed and taken care of very well (30).

In conclusion, the high prevalence of child obesity in Hanoi was mainly caused by lower physical activity rather than higher energy intake. Based on our present findings we need to consider strategies for obesity control in Vietnam once again.

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CONFLICTS OF INTEREST (COI)

The authors have no conflicts of interest to disclose.

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Impressions and Turning points of Japanese public health dietitians: a web-based cross-sectional study

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ABSTRACT: *Background/Purpose:* The purpose of this study was to clarify the impressions and turning points (hereinafter referred to as "impressions") of each organization where public health dietitians work in Japan. *Method:* In 2021, we conducted a complete Web-survey of Japanese public health dietitians working in prefectures, special wards and cities with public health centers, and municipalities. The impressions and turning points of the participants were classified based on the basic guidelines for improving health promotion and nutrition and dietary habits by public health dietitians in the community. *Results:* The sample of responses included 425, 323, and 914 public health dietitians working in prefectures, special wards and cities with public health centers, and municipalities, respectively. The most impressionable factors for prefectural dietitians were collaborative work, work experience other than health and sanitation departments, health crisis management, self-operated and planned projects, work at the headquarter, and research activities. Public health dietitians in special wards and cities with public health centers were most impressed by work experience other than health and sanitation departments, resident support, health guidance, collaborative work, self-planned and managed projects, and maternal and child health. Municipal public health dietitians were most impressed by maternal and child health, adult health, welfare for older adults, collaborative work, changing jobs to administrative positions, and general interpersonal work. *Conclusion:* We found regardless of the organization where Japanese public health dietitians work meaningful experiences were similar. Support of these experiences may improve self-efficacy of public health dietitians.

Key Words: public health dietitians, self-efficacy, impression, turning point, duty, Japan

INTRODUCTION

Public health nutrition is the art and science of promoting population health status via sustainable improvements in the food and nutrition system. Based on public health principles, it is a set of comprehensive and collaborative activities, ecological in perspective, and intersectoral in scope; it includes environmental, educational, economic, technical, and legislative measures (1). For example, public health dietitians implement salt reduction in communities through assessing community, informing to people, and collaboration with stakeholders (2). Dietitians are specialists responsible for public health nutrition activities. The number of public health dietitians working at public health centers and health centers is smaller than that of public health nurses in Japan (3). To promote businesses with a small number of people, increasing self-efficacy is essential (4).

Self-efficacy, as proposed by Bandura, is an individual's belief in how well they can perform the actions required to produce a certain result (4). Individuals with high self-efficacy exhibit behavioral characteristics such as willingness to make a great deal of effort, willingness to tackle challenges, and a high degree of expectation for eventual success (4).

Extant literature has reported that professionalism and self-efficacy are associated with length of service, personal development, skill improvement, meaningful clinical experience, and participation in social and external activities (5). The Ministry of Health, Labour and Welfare presents the work of public health dietitians in prefectures, special wards and cities with health centers, and municipalities (6). Little is known about what working activities are meaningful experiences for public health dietitians.

The duties of public health dietitians working in prefectures, special wards and cities with public health centers, and municipalities vary (6). Therefore, this study aims to clarify public health dietitians' meaningful experiences, through investigating the impressions and turning points in each type of organization where public health dietitians work. The results of this study may help improve the work of public health dietitians.

MATERIALS AND METHODS

1. Participants

We conducted a cross-sectional survey among dietitians working in prefectures, special wards and cities with public health centers, and municipalities. The inclusion criteria for the study participants were:

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(1) those who responded as public health dietitians in a survey by the Ministry of Health, Labour and Welfare; and (2) those with a full-time or part-time (at least four days a week and at least six hours a day) employment status. However, those currently working full-time in fields such as childcare, welfare for older adults, boards of education, and medical care were excluded.

Request letters were sent in January 2021 to dietitians at supervise bureaus who met the inclusion criteria. In the request letters, we specified the purpose of the survey and the URL and QR code linked to the online questionnaire. The web-survey was conducted from January 29, 2021, to March 2, 2021 (Survey Research Center Co., Ltd.). A request for cooperation was presented at the beginning of the questionnaire form. The request clearly stated the purpose of the survey and outlined that all responses and participation would be anonymous, cooperation in the survey was voluntary, responses would be regarded as consent, and that there would be no disadvantage for non-responses. Additionally, since there was a possibility that personally identifiable information may be transmitted to us when returning responses, we asked the commissioning company to create screens related to the questionnaire responses and receive all replies. This meant that the researchers would only receive simply entered databases obtained by the consignment company, and no identifiable respondent information, such as email addresses. All information was destroyed after the survey was completed and secondary use of the data for other purposes was prohibited.

Due to the wide inclusion criteria, the survey request was sent to an unknown number of public health dietitians in Japan, however the final sample of responses included 425, 323, and 914 public health dietitians working in prefectures, special wards and cities with public health centers, and municipalities, respectively.

Public awareness and cooperation regarding the survey was obtained from the public health department of the Japan Dietetic Association and the Japan association of public health center registered dietitians.

Procedures for this study were followed in accordance with the ethical standards of the Helsinki Declaration and were approved by the Ethical committee of Osaka City University (Institutional Review Board protocol 20-27, approval date: August 14, 2020).

2. Survey items

The survey included items regarding age, sex, and length of service for each main type of work. Additionally, dietitians working in prefectures and special wards and cities with public health centers were asked about the length of duties mainly responsible for community health promotion and improving nutrition and dietary habits at the health department (the headquarter), public health centers, and health centers, food hygiene-related departments, welfare for older adults, and boards of education. We asked dietitians working in municipalities about the length of their main duties, such as community health promotion and improving nutrition and dietary habits at health centers, welfare for older adults, child welfare, and boards of education.

Regarding impressions and turning points, participants were asked, "What was the work that left the most impression on you, or what was the turning point for you?" The responses were categorized based on the Ministry of Health, Labour and Welfare's "basic guidelines for health promotion and improvement of nutrition and dietary habits by public health dietitians in the community" (6). The impressions and turning points of dietitians working in prefectures and special wards and cities with public health centers extracted from the survey responses included: maternal and child health projects, projects with older adults, specific health guidance, guidance to specific food service facilities, collaboration with health mates, community assessments, work experience other than health and sanitation departments, work at the headquarters, work at public health centers, changing jobs to administrative positions, planning, food environment improvements, health crisis management, research activites, self-planned and managed projects, presentations at academic conferences, people in the same workplace, general collaborative work, municipal support, duties and initiative as supervisors, human resource development, off-duty activities, participation in workshops, and food labeling work. The extracted impressions and turning points of dietitians working in municipalities included: maternal and child health projects, adult health projects, health guidance, welfare for older adults, general collaborative work, changing jobs to administrative positions, general interpersonal work, collaboration with health mates, health crisis management, work experience other than health and sanitation departments, participation in training sessions, community assessment, self-planned and managed projects, presentations at academic conferences, human resource development, off-duty activities, and people in the same workplace.

RESULTS

Table 1 shows the basic characteristics of the participants. Few dietitians working in prefectures, special wards and cities with public health centers, or municipalities had work experience outside of promoting community health and improving nutrition and dietary habits at the headquarters, public health centers, or health centers. Community health promotion and improvement of nutrition and dietary habits refer to working with food hygiene related departments, welfare for older adults, and boards of education.

The highly ranked impressions and turning points for dietitians working in prefectures included: general collaborative work, work experience other than health and sanitation departments, health crisis management, self-planned and operated projects, work at the headquarters, and research activities (Table 2). The highly ranked impression and turning points for dietitians working in special wards and cities with public health centers included: work experience other than health and sanitation departments, resident support, health guidance, general collaborative work, self-planed and operated projects, and maternal and child health. Finally, the highly ranked impressions and turning points for dietitians working in municipalities included: maternal and child health, adult health, welfare for older adults, general collaborative work, changing jobs to administrative positions, and general interpersonal work.

Table 1. Basic characteristics of participants

			Prefecture (n=452)		Special wards and cities with public health centers (n=323)		Municipalities (n=914)	
			n	(%)	n	(%)	n	(%)
Age		20s	110	(24.3)	69	(21.4)	227	(24.8)
		30s	79	(17.5)	87	(26.9)	284	(31.1)
		40s	120	(26.5)	84	(26.0)	262	(28.7)
		Over 50s	143	(31.6)	83	(25.7)	141	(15.4)
Sex		Female	430	(95.1)	311	(96.3)	890	(97.4)
		Male	22	(4.9)	12	(3.7)	24	(2.6)
Work history	Local health promotion and improvement of nutrition and eating habits at the hygiene administration department (main government office)	No work experience	249	(55.1)	187	(57.9)	-	-
		<3 years	80	(17.7)	53	(16.4)	-	-
		3–5 years	73	(16.2)	31	(9.6)	-	-
		5–10 years	31	(6.9)	34	(10.5)	-	-
		10–20 years	15	(3.3)	14	(4.3)	-	-
		20–30 years	3	(0.7)	3	(0.9)	-	-
		>30 years	1	(0.2)	1	(0.3)	-	-
	Community health promotion and improvement of nutrition and dietary habits at public health centers and health centers	No work experience	11	(2.4)	13	(4.0)	11	(1.2)
		<3 years	93	(20.6)	81	(25.1)	281	(30.7)
		3–5 years	54	(11.9)	44	(13.6)	133	(14.6)
		5–10 years	75	(16.6)	76	(23.5)	189	(20.7)
		10–20 years	132	(29.2)	69	(21.4)	183	(20.0)
		20–30 years	73	(16.2)	32	(9.9)	107	(11.7)
		>30 years	14	(3.1)	8	(2.5)	10	(1.1)
	Departments related to food hygiene	No work experience	406	(89.8)	293	(90.7)	-	-
		<3 years	22	(4.9)	15	(4.6)	-	-
		3–5 years	10	(2.2)	4	(1.2)	-	-
		5–10 years	11	(2.4)	9	(2.8)	-	-
		10–20 years	3	(0.7)	2	(0.6)	-	-
		20–30 years	0	(0.0)	0	(0.0)	-	-
		>30 years	0	(0.0)	0	(0.0)	-	-
	Departments related to older adults/Welfare for older adults	No work experience	435	(96.2)	291	(90.1)	706	(77.2)
		<3 years	8	(1.8)	18	(5.6)	98	(10.7)
		3–5 years	6	(1.3)	7	(2.2)	37	(4.0)
		5–10 years	2	(0.4)	4	(1.2)	36	(3.9)
		10–20 years	1	(0.2)	3	(0.9)	23	(2.5)
		20–30 years	0	(0.0)	0	(0.0)	12	(1.3)
		>30 years	0	(0.0)	0	(0.0)	2	(0.2)
	Child welfare	No work experience	-	-	-	-	730	(79.9)
		<3 years	-	-	-	-	49	(5.4)
		3–5 years	-	-	-	-	47	(5.1)
		5–10 years	-	-	-	-	51	(5.6)
		10–20 years	-	-	-	-	28	(3.1)
		20–30 years	-	-	-	-	8	(0.9)
		>30 years	-	-	-	-	1	(0.1)
	Board of education	No work experience	421	(93.1)	258	(79.9)	796	(87.0)
		<3 years	8	(1.8)	17	(5.3)	47	(5.1)
		3–5 years	15	(3.3)	15	(4.6)	22	(2.4)
		5–10 years	5	(1.1)	19	(5.9)	32	(3.5)
		10–20 years	3	(0.7)	11	(3.4)	12	(1.3)
		20–30 years	0	(0.0)	3	(0.9)	4	(0.4)
		>30 years	0	(0.0)	0	(0.0)	1	(0.1)

Table 2. Factors that left an impression on or were a turning point for administrative dietitians

	Prefecture (n=452)		Special wards and cities with public health centers (n=323)		Municipalities (n=914)	
	n	(%)	n	(%)	n	(%)
Maternal and child health	2	(0.4)	16	(5.0)	109	(12.1)
Adult health	0	(0.0)	0	(0.0)	40	(4.4)
Welfare for older adults	12	(2.7)	2	(0.6)	35	(3.9)
Health guidance	12	(2.7)	28	(8.8)	121	(13.4)
Resident support	21	(4.7)	36	(11.3)	0	(0.0)
General interpersonal work	0	(0.0)	0	(0.0)	129	(14.3)
Guidance to specific food service facilities	16	(3.6)	14	(4.4)	0	(0.0)
Collaboration with health mates	7	(1.6)	8	(2.5)	34	(3.8)
General collaborative work	59	(13.1)	26	(8.1)	61	(6.8)
Community assessments	15	(3.3)	4	(1.3)	14	(1.6)
Work experience other than health and sanitation departments	46	(10.2)	39	(12.2)	106	(11.7)
Working at the headquarter	30	(6.7)	8	(2.5)	0	(0.0)
Working at the public health center	3	(0.7)	6	(1.9)	0	(0.0)
Changing jobs to administrative position	13	(2.9)	14	(4.4)	27	(3.0)
Planning	15	(3.3)	15	(4.7)	50	(5.5)
Food environment improvements	11	(2.4)	0	(0.0)	0	(0.0)
Health crisis management	46	(10.2)	11	(3.4)	11	(1.2)
Research activities	27	(6.0)	10	(3.1)	0	(0.0)
Self-planned and managed projects	36	(8.0)	21	(6.6)	17	(1.9)
Presentation at academic conferences	6	(1.3)	4	(1.3)	5	(0.6)
Work behavior of people in the same workplace	13	(2.9)	6	(1.9)	16	(1.8)
Municipal support	6	(1.3)	0	(0.0)	0	(0.0)
Duties and initiative as supervisors	1	(0.2)	0	(0.0)	2	(0.2)
Human resource development	9	(2.0)	0	(0.0)	4	(0.4)
Off-duty activities	4	(0.9)	1	(0.3)	4	(0.4)
Participation in training sessions	6	(1.3)	1	(0.3)	0	(0.0)
Business on food labeling	12	(2.7)	6	(1.9)	0	(0.0)
None	75	(16.7)	55	(17.2)	191	(21.2)

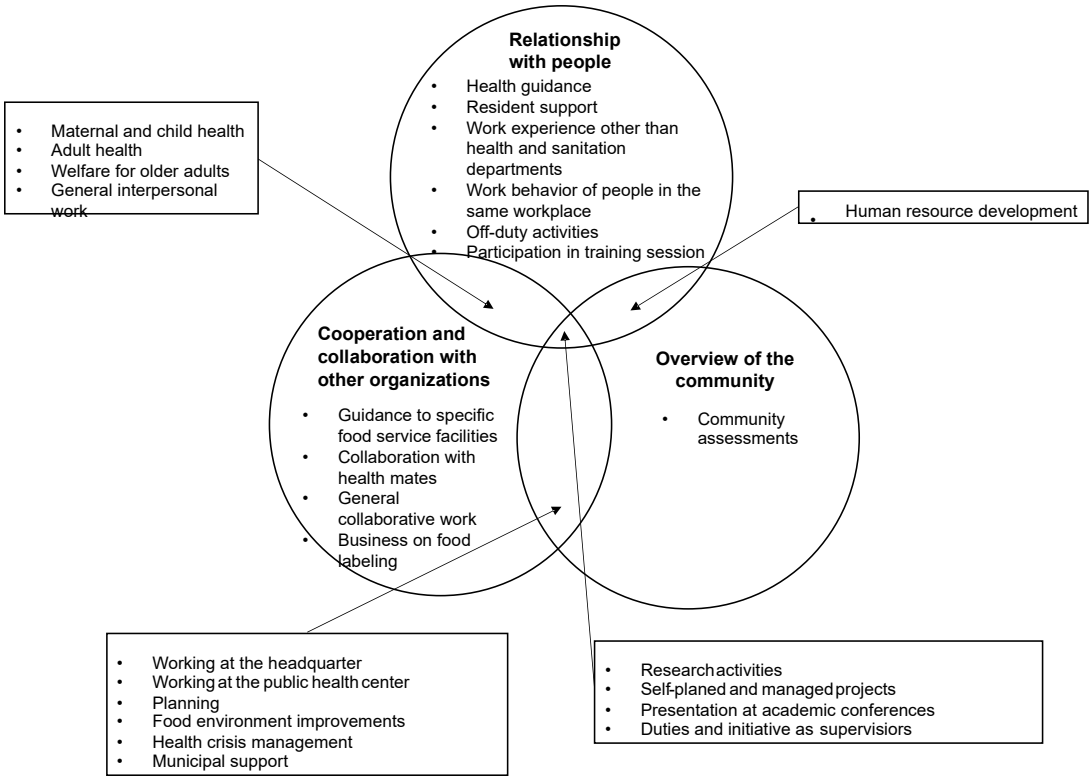

Figure. 1 Three elements that left an impression on or were turning point for public health dietitians.

The impressions and turning points of dietitians are categorized into (1) relationships with people, (2) collaboration and cooperation with other organizations, and (3) overview of the community (Figure 1). However, the three categories are not independent of each other and all have something in common. Put differently, what left an impression or was a turning point for dietitians may be only one category, but it may be related to two or more categories. Additionally, the particulars of the impression and turning points in each category differ from person to person, as identified in their responses. For example, regarding the impression of the "research activities," one participant described them as "a tough job, but I felt a great sense of accomplishment when I got their cooperation"; therefore, this response was categorized as (1) relationships with people, and (2) collaboration and cooperation with other organizations. Another participant described this impression as "through being involved in a large-scale nutritional survey, the reality of the community has come into view before my eyes," and this response was categorized as (3) overview of the community. Categories (1) to (3) in Figure 1 are only classified according to the descriptions of the participants of this study, and the content of the duties were not necessarily limited to those categories.

Regarding category (1) relationships with people, some participants described experiences of providing health guidance to individuals and seeing their improved health checkup results in the following year. Additionally, the gratitude expressed by the people involved was described as one that left a lasting impression on dietitians. Residents, health mates, and dietitians working for other organizations and institutions were described as cooperative organizations. Participants categorized into (2) collaboration and cooperation in other organizations described the difficulty of conveying their thoughts as a public health dietitian to other organizations, being able to carry out projects in collaboration with other organizations, and broadening their perspectives in their responses. The region to be overlooked differs depending on the participants' organization and may be a prefecture, a municipality under the jurisdiction of the public health center to which the dietitian belongs, or a municipality to which the dietitian belongs. While formulating plans, such as health promotion plans and shokuiku (food and nutrition education) promotion plans, and conducting community assessments, project planning, budget acquisition, and surveys, the respondents described being able to grasp the region from a bird's-eye view, which left an impression on them. This was also described as having led to a turning point for some respondents.

DISCUSSION

In a previous survey of public health dietitians working in municipalities, project management, establishing a cooperative system, and general education and support were extracted as factors that constituted confidence in duties (7). These three factors correspond, respectively, to the categories used in this study: overview of the community, cooperation and collaboration with other organizations, and relationships with people. The previous survey has also reported the positive experience of the educational effect, as the experience of independent

project management was associated with project management self-efficacy (7). This further corresponds with factors described as leaving an impression or being a turning point in the present study.

Bandura states that self-efficacy is acquired through four sources: performance achievement, vicarious experience, verbal persuasion, and emotional arousal (8). In this study, the best impression or turning point tended to be the achievement of executive behavior and verbal persuasion. The few descriptions of vicarious experiences may be explained by the fact that few public health dietitians share the same workplace.

Public health dietitians' interactions with people depend on their duties. In general, the health statuses of patients in hospitals are more variable than that of community-dwelling residents. Therefore, it is thought that work experience other than health and sanitation departments are more frequently described as leaving an impression or being a turning point.

Nutrition is the foundation for people to live well throughout their lives and is an essential element for realizing a vibrant and sustainable society. Nutrition is relevant at all life stages: pregnancy, infancy, childhood, adolescence, adulthood, and old age. Shokuiku (food and nutrition education) initiatives are developed through collaboration and cooperation among a variety of stakeholders, including nursery schools, schools, governments, food-related groups and organizations, and so on (9). For public health dietitians to respond to such wide-ranging and challenging issues, they must not only work with other occupations within the organization to which they belong but also with various relationships, including dietitians of organizations that they do not belong to and local residents. It is, therefore, necessary to steadily promote measures and obtain results while cooperating with other parties.

Furthermore, it is important for public health nutrition activities to follow the plan-do-check-act cycle based on community assessments (10). Moreover, it is necessary to consider the entire community when formulating budgets and various plans. In the course of community assessments, whose aims are to understand the actual and potential health issues of individuals, families, and the entire community, and consider solutions while clarifying the causes and backgrounds, evaluation and improvement of implemented measures was described as the event that led to obtaining an overview of the community. Additionally, it was noted that people working at the headquarters tended to work at the prefectural level rather than those working at the public health centers, which left a fresh impression on them.

The three categories in this study are included in the career note of lifelong education system for career advancement shown by the Japanese Dietetic Association (11). Katz has shown that effective administration depends on three basic personal skills, which have been called technical, human, and conceptual (12). The three skills correspond to the categories in this study. By developing the three skills through helping experience and train the three categories it may prove useful in improving self-efficacy of Japanese public health dietitians.

The impressions and turning points are divided into three categories in this study, however, as mentioned in the results, there are many overlapping factors. Furthermore, classifications were made based on the descriptions provided by the participants of this study. Therefore, there is a possibility that certain work contents are related to categories that were not shown in the results of this study.

In this study, more than 10% of public health dietitians described not experiencing any impressions or turning points in their careers. Successful experiences are important factors in enhancing self-efficacy as they tend to leave an impression or become a turning point. Therefore, there is a need for a support program that allows public health dietitians to experience success and increase their self-efficacy.

This study has two limitations. First, to increase the response rate of this survey, we obtained the cooperation of the Japan Dietetic Association and the Japanese association of public health center registered dietitians. The recovery rate was not high; however, the exact recovery rate was unknown because the exact number of public health dietitians in Japan is unknown. There is a possibility that the proportion of respondents in this study does not represent the actual administrative dietitians in Japan. Second, because this survey was conducted during the COVID-19 pandemic, there was a high percentage of respondents who said that health crisis management such as infectious disease countermeasures left an impression on them or served as a turning point.

CONCLUSION

We conducted a survey of public health dietitians working in prefectures, special wards and cities with public health centers, and municipalities. Regardless of the organization they worked for, the factors found to have left an impression on or be considered as turning points for public health dietitians were classified into (1) relationships with people, (2) collaboration with other organizations, and (3) overview of the community. These results suggest that it is important to support these experiences to raise the self-efficacy of public health dietitians.

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Original

Exploring Perspective of On-call Dietitian Residency Program among Healthcare Personnel in a Government Tertiary Hospital: A Pilot Qualitative Study

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ABSTRACT *Background and purpose.* In Malaysia, on-call service has been well established and as exists as part of arrangements to provide appropriate service cover across the national tertiary government hospital especially by the profession of medical doctors, pharmacists, and nurses. Dietitian residency on-call program has been beginning nationwide government hospital in 2013. Therefore, the main objective of the study is to explore the different perspective of on-call dietetic program among different health care providers based on a largest government tertiary hospital setting ranked by bed capacity in southern zone of Malaysia, Johor. *Methods.* Seven healthcare personnel participated in a semi-structured focus group. The participants invited were come from various general practices in different department with different gender, profession, and clinical experience. Key questions examined these individuals' perspective about on-call dietetic program. *Result.* This study identified four main categories that catalytic for the better understanding of On-call Dietitian Residency Program among healthcare providers. There were four categories: (1) Perception On-call Dietitian Residency Program among Healthcare Personnel; (2) Redefining On-call Dietitian Residency Program; (3) Identified challenges from On-call Dietitian Residency Program and (4) Various concerns in ward during on-call shift. *Conclusion.* Participants expressed positive comments about the 4-hour on-call weekend cover.

Key Words: on-call service, on-call Dietitian, focus groups, tertiary hospital

INTRODUCTION

'On-call' is a term defined as being available to work outside one's normal working hours. Employees who work on-call are expected to be available at any time of day including weekend, to carry out their working duties (1,2). It is widely used by many different healthcare professions.

In Malaysia, on-call service has been well established and as exists as part of arrangements to provide appropriate service cover across the national tertiary government hospital especially by the profession of medical doctors, pharmacists, and nurses (3). Given wide range of areas, which could potentially require support in a tertiary government hospital, Dietitian residency on-call program has been began nationwide government hospital in 2013. Such system has not yet introduced or practiced in private sector of any countries, including Malaysia. Up to the date, no literature review or any study has published regard the Dietitian residency on-call program.

Overall, the residency on-call program was designed to offer a supportive environment in which the resident is held accountable for pursuing optimal outcomes of direct patient care from therapeutic diet, enteral formula and nutrition care process monitoring aspect. During late evenings of Friday, weekends, and holidays, the clinical dietetics service may not be available to assess. The on-call resident is then assigned to provide such services. Medical Nutrition Therapy information consultation includes recommending enteral formula, assessing adverse enteral formula events, recommending specific enteral or diet therapeutic administration, screening for drug and nutrition interactions, recommending regime for enteral formula, and identifying difficulty oral intake. The resident also responds to emergency diet related requests submitted to the Dietetic department after business hours and on holidays and evaluates or even attending out-patient or in-patients' basis. Residents also participate in food service-related responses, and their support is crucial when the wrong diet received or wrong diet ordering event occurred. Sometimes, any unexpected event from outsourced or centralized food service system might require communication between food service dietitian and clinical dietitian. The on-call dietitian resident is the first to respond to all patient related emergencies.

The traditional working hours for hospital dietitians are between 08:00 and 17:00, Monday to Friday. At weekends, there are minimal clinical dietetics and food service services although dietitian is ready to standby throughout the day if there is urgency to be handled. This set-up leaves periods of time during the weekends where there are no hospital dietitians on site. After Dietitian residency on-call program started nationwide, on-call resident is expected to deliver additional 4-hour shifts beginning at 0830 every Saturday. During an on-call shift, residents are expected to fulfill any required rotation duties before leaving the hospital by no later than 1230. Due to shortage of man force, this on-call program is initiated at government hospital with more than 6 permanent Dietitian residents.

On-call resident services are provided

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throughout the year, regardless of program activities. Through this mechanism, clinical services are provided by onsite dietitian resident every day. If residents are not present to provide the services, head of clinical service are assigned to on-call shifts. In turn, the dietetic department provides equivalent time off once the number of on-call duty hour exceeded 8 hours. Each resident is assigned an equal number of shifts.

It may be impractical for an institution to have clinical Dietitian available 24 hours a day, but having an on-call resident monitor selected patients like refeeding syndrome, swallowing difficulty is crucial ideally. This model resembles the medical house-staff cross-cover model. The resident provides the requested service during the on-call shift which may contributes to a continuity of high-level care in long run.

Up to now, service commitments are often met in the form of rotations or blocks devoted to a practice area. Some hospital meets this requirement or criteria may benefit through such longitudinal patient care experiences. This design is commonly used in the medical, pharmacy or primary care setting, where the focus is on managing chronic or acute diseases and promoting continuity of care. These same models often hold true for dietetic practitioners with direct patient care responsibilities. However, many dietetic departments, particularly in the 300 bed above tertiary care setting, struggle to provide a high level of care directly to each patient around the clock. It became the main issue of current on-call service, mainly of each tertiary government hospital.

Therefore, the main objective of the study is to explore the different perspective of on-call dietetic program among different health care providers based on a largest government tertiary hospital setting ranked by bed capacity in southern zone of Malaysia, Johor. The benefit of this study is four-fold; first of all, this is the first study to report the experience of dietetic residency on-call program. Secondly, it revealed the weakness and strengths in current implementation model, as it may vary from other similar medical profession for example, pharmacy, medical or laboratory officers. Thirdly, the data may reflect the necessary of on-call program in Malaysia government tertiary hospital setting. Fourth, the suggestion collected may aid the policy maker in avoidance of any unintended consequences as several studies confirmed the association between longer work hours and fatigue-related injuries in residents (4,5).

MATERIALS AND METHODS

Study Design: For this study we used phenomenological approach qualitative method (6). Between 1st October 2020 and 30 October 2020, we conducted focus group interviews in order to explore understanding of On-call Dietitian Residency Program among Healthcare Personnel based on a largest government tertiary hospital setting ranked by bed capacity in southern zone of Malaysia, Johor. The study protocol was reviewed and approved by the Medical Research and Ethics Committee, Malaysia (NMRR-19–3818-52373). All respondents provided written informed consent. All methods were performed in accordance with the relevant national and international guidelines and regulations. No compensation was provided for study participation. The interview was facilitated by the experience moderator (Pn. Fatimah Othman) and assisted by the assistant moderator (Pn. Afifah Binti Abd Rahim and Pn. Faulina Binti Khamisan). All participants received written information, including a statement that participation was voluntary and the results of the study would be anonymous.

Participants: Two medical officers, one pediatrician, two practice nurses and two resident dietitians (subsequently referred to as HPs) participated in a focus group interviews. The participants invited were come from various general practices in different department with different gender, profession, and clinical experience. An over-recruitment of one or two participants is to pursue in case there were ‘no-shows’. The participants were briefed about the study purpose one week before the focus group discussion held. The characteristics of the focus group participants are presented in Table 1.

Study Sites: In this qualitative study, the data collection was conducted at Hospital Sultanah Aminah, in setting that would be comfortable for participants. Focus groups interview were held at a mix language between English and Bahasa Melayu.

Procedure: FGs were led by experienced moderators an assistant moderator (observer), who takes notes during the discussions and make sure the moderator does not overlook any participants trying to add comments. Note takers were present during the session. The focus group (FG) lasted between 90 and 120 minutes audiotaped with permission of the participants. Food was provided at the end of the session. All text was translated to English and transcribed. Translation integrity was verified by a native-language speaker and FG moderators reviewed transcripts for accuracy.

Interview guide (Semi-Structured Questionnaire): A semi-structured question guide (Appendix 1.0) was developed by the research team, aiming to identify different perspective of on-call dietetic program among different health care personnel based on the five categories of questions and probes developed by Krueger and Casey (7). Firstly, a warm-up opening (“tell us your name) and introductory questions (Are you aware of the on-call services provided by Dietetic Service?)(How do you feel if there are 4-Hour On-call Dietitian Residency Program or in vice versa?) which allowed participants to get acquainted and feel connected, and to start the discussion of the topic. Transition questions (How urgent do you need response from a Dietitian should be?) (How well do you know about the variety of enteral formula?) (How far can you commit to the extended services [on-call dietetic residency program?) were used to move into respectively by profession. Key questions addressed the primary concerns of the study (Which is more beneficial during on-call shift? Nutrition status monitoring or responding to new referral); (In practice, do you initiate feeding’s prescription yourself over the weekend? How frequent? What is the reference used?); (Do you verify the suitability of therapeutic diet during weekend?); (What is the challenge(s) on implementing the on-call dietetic residency program?); (What do you feel about the on-call dietetic residency program in short and long term?) The key questions were led to the focus on

the purpose of this study, what may or may not influence the demand of dietetic residency during weekend or public holiday. Finally, participants were asked to share ideas (Can you suggest us a few appropriate ways of implementation on-call dietitian residency program?) concerning appropriate implementation on-call residency program to counter issue related to on-call residency program in tertiary hospital. A pilot focus group was conducted to determine the appropriateness of questions for eliciting responses to the target issues, and for the optimal length of focus groups. Data from the pilot focus group were not included in the analysis

Data analysis: The interviews were audio taped and transcribed verbatim. The text units were coded; we categorised statements based on the introductory questions, using a systematic text condensation inspired by Corbin and Strauss (8). In addition, the transcripts were entered into NVivo 9 and reviewed line-by-line for categories (main categories) and ideas (subcategories) (9).The basic idea was to explore the understanding of On-call Dietitian Residency Program brought up in discussion by the participants. We identified and discussed the text units that summarised the discussions to ensure consensus and that all data were appropriately categorised. We then identified four main categories that catalytic for the better understanding of On-call Dietitian Residency Program among healthcare providers. There were four categories: (1) Perception On-call Dietitian Residency Program among Healthcare Personnel; (2) Redefining On-call Dietitian Residency Program; (3) Identified challenges from On-call Dietitian Residency Program and (4) Various concerns in ward during on-call shift. These four categories were discussed and agreed upon by the authors.

Table 1. Category by panel involved in focus group session

	Panel						
	1	2	3	4	5	6	7
Demographic							
Age	40	28	29	42	45	27	35
Gender	Female	Female	Female	Male	Female	Female	Male
Occupation	Pediatrician	Dietitian	Staff Nurse	Physician	Senior Staff Nurse	Dietitian	Senior Medical Officer
First category: Perception On-call Dietitian Residency Program among Healthcare Personnel							
First subcategory	Y	—	—	—	Y	—	Y
Second subcategory	Y	—	Y	Y	Y	Y	—
Third subcategory	Y	Y	—	Y	—	—	Y
Second category: Redefining On-call Dietitian Residency Program							
First subcategory	Y	—	—	—	Y	Y	Y
Second subcategory	—	—	—	Y	Y	—	Y
Third subcategory	—	Y	—	Y	Y	—	Y
Fourth subcategory	Y	—	Y	Y	Y	—	Y
Fifth subcategory	Y	—	Y	Y	—	—	Y
Third category: Identifying the challenges							
First subcategory	—	Y	—	—	—	Y	—
Fourth category: Various concerns in ward during on-call shift							
First subcategory	Y	—	Y	—		—	—
Second subcategory	—	—	Y	—	Y	—	—
Third subcategory	—	—	Y	—	Y	—	Y
Fourth subcategory	Y	—	—	Y	Y	—	—
Fifth subcategory	—	—	Y	—	Y	—	Y

Note. Y : discussed in focus group

RESULTS

The perspectives discussed were highly consistent across different healthcare personnel. Therefore, the results are summarized according to the four major categories to express the purpose of this study (see Tables 2, 3, 4 and 5).

Table 2. Representative quotes for first category: Perception On-call Dietitian Residency Program among Healthcare Personnel

Do you aware of On-call Dietitian Residency Program started since 2013?	
“Tidak” *"No"*	1
“tidak perasan ada Dietitian Oncall ” *"Didn't notice there was an Oncall Dietitian"*	5
“Tidak tahu” *"Dont know"*	7
How do you feel if there are 4-Hour On-call Dietitian Residency Program or in vice versa?	
“jika ada Dietitian Oncall kerana tindakan terus dapat dijalankan terus” *"If there is a Dietitian Oncall the action can be taken quickly"*	5
“jika ada Dietitian Oncall pada hujung minggu adalah bagus” *"If there is an Oncall Dietitian on the weekend, that is great"*	1
“sekiranya ada Dietitian Oncall adalah baik untuk kes-kes yang tertentu” *"If there is a Dietitian Oncall is good for certain cases"*	1
“ia adalah idea yang baik jika ada Dietitian Oncall” *"It's a good idea to have an Oncall Dietitian"*	4
“Oleh jika ada Dietitian Oncall kami akan dapat selesaikan banyak perkara” *" if there is an Oncall Dietitian we will be able to solve many things"*	4
“Jadi jika ada Dietitian Oncall adalah lebih baik” *"So if there is an Oncall Dietitian, it is better"*	5
“oncall ini adalah baik untuk pesakit ” *"This oncall is good for patients"*	6
“Saya ada bertanya kepada kawan-kawan saya juga tiada masalah sekiranya tiada Dietitian Oncall” *"I have asked my friends that there is no problem if there is no Oncall Dietitian"*	3
“Short term wise it is good thing when Dr kew our service, it will be Medical nutrition therapy can be more emphasized and patient can get benefit from it”	6
“It will be better ada oncall dietitian because we have multiple problem di hospital”	1
“jika ada dietitian oncall bagusla” *"If there oncall dietitian, it is good "*	3
“it just that if there is oncall dietitian during weekend it could be better”	1
At this moment in time, do you need On-call Dietitian to handle urgent referrals?	
“kami tidak rujuk Dietitian secara ‘non- planned’ pada hujung minggu” *"We do not consult Dietitians by 'non-planned' basis on weekends"*	7
“urgency wise tidak menjadi isu kepada kami” "Urgency wise is not an issue for us"	7
“Saya rasa tidak terlalu urgent untuk rujuk kepada Dietitian ” *"I don't think it's too urgent to consult a Dietitian"*	1
“Kita tidak harapkan Dietitian dapat datang dan manage pada masa tersebut tapi kita akan rujuk dietitian hari esok untuk sort the feeding” *"We do not expect the dietitian to come and manage at that time but we will consult the dietitian tomorrow to sort the feeding"*	4
“Tidak urgent sangat” *"Not very urgent"*	1
“Jika saya lihat wad yang saya jaga, belum lagi memerlukan kita kena berada di tempat itu untuk oncall” "If I look at the ward I'm in charge of, it doesn't require us to be there to oncall"	2
“For me until now. I don’t see a case that require dietitian attention urgently or immediately”	7

Regular font styles: Original script
Italic font styles: Translated script
Number: Panel involved

First category: Perception On-call Dietitian Residency Program among Healthcare Personnel.

For first category, we identified three subcategories: (1) Do you aware of On-call Dietitian Residency Program started since 2013?,(2) How do you feel if there are 4-Hour On-call Dietitian Residency Program or in vice versa?, and (3) At this moment in time, do you need On-call Dietitian to handle urgent referrals? (see Table 2) .

First subcategory: Do you aware of On-call Dietitian Residency Program started since 2013?

Three out of five participants except two in-house Dietitians clearly speculated that they did not aware and did not know of such On-call Dietitian Residency Program existed.

Second subcategory: How do you feel if there are 4-Hour On-call Dietitian Residency Program or in vice versa?

'Good idea', 'it could be better' were consistently speculated in nearly all participants to describe how they feel about the initiated 4-Hour On-call Dietitian Residency Program in a tertiary hospital setting. Participants clearly attributed this program enable quick action can be taken to resolve multiple issues or handling specific referrals especially in a tertiary government hospital setting. Particularly, patients' outcome will be benefited from medical nutrition services. However, a participant also mentioned that they did not meet any problems without aware of this initiated program by far based on their experience despite she also agreed that it was 'fantastic idea' of such effort implemented.

Third subcategory: At this moment in time, do you need On-call Dietitian to handle urgent referrals?

It was agreed that most of participants did not required On-call Dietitian to handle urgent referrals as 'not so urgent' and 'not a problem', was consistently noted. A Participants clearly attributed their department would refer the case to in-house Dietitians in the next working day.

Second category: Redefining On-call Dietitian Residency

For second category, we identified five subcategories: (1) What is the role of On-call Dietitian?,(2) What is urgent referral required attention of On-call Dietitian?, (3) What is tangible way to handle urgent referrals?, (4) Suggestion to improve On-call Dietitian Residency Program(see Table 3).

First subcategory: What is the role of On-call Dietitian?

Participants commented the role of On-call Dietitian should emphasis on 'optimising', 'adjusting' therapeutic and enteral regime in following-up referrals particularly. A participant also expressed a notion that by communicating with On-call Dietitian, this allowed their department to obtain sufficient quantity of required enteral product even during weekend. Besides, a participant also expressed that monitoring the suitability of therapeutic diet in ward basis and checking the raw materials during receiving process were part of the crucial task of On-call Dietitian in hospital setting.

Second subcategory: What is urgent referral required attention of On-call Dietitian?

In term of urgent referral, participants especially physician agreed that there was times where urgent attention from On-call dietitian might required especially patient admitted and diagnosed with 'Myocardia Infarct (MI)', patient experienced with 'electrolyte Imbalance' and 'diarrhea' or even 'intubated patient' with complication of 'sepsis' and 'cardiogenic shock'. A participant also highlighted adult with chronic diabetes can also be considered as critical to be handled as there required longer duration of counseling which emphasised on behavior change.

Third subcategory: What is tangible way to handle urgent referrals?

Participants described being 'more responsive', 'easily contactable via phone' were more tangible to handle urgent referrals. Nearly all participants appeared be somewhat agreement to these suggestion by nodding their head. One participant stressed on the 'practicality of passive On-call' rather 'waiting in hospital to handle any referrals required immediate attention'. Yet, one of the participants representing from in-house Dietitians speculated that 'passive On-call have always been put into the practice of hospital'. 'The respective ward has their in-house Dietitians in charge's personal phone number', so 'they can contact their ward's Dietitians anytime in fact'.

Fourth subcategory: Suggestion to improve On-call Dietitian Residency Program

Firstly, 'review follow-up referral in ward frequently', particularly 'patients initiated parenteral nutrition therapy'. Secondly, assigned duty of On-call Dietitian from dietetic and food service department to be exact 'in inspecting the suitability of therapeutic diet received by admitted patients in ward'. Thirdly, 'leaving phone number of On-call dietitian' in every unit of ward. Fourth, 'On-call Dietitian assigned to be duty if there were long public holiday'. Yet, it was noted that it was not always possible to ensure task given to be fulfilled within 4-Hour, sometimes, 'problem or immediate effort might be needed right after 4-Hour of duty'. Thus, '0800 - 1700 of On-call Dietitian Residency Program was suggested to be more realistic and practicality' especially in government tertiary hospital.

Third category: Identifying the challenges

For third category, we identified one subcategories: (1) What are the challenges faced by On-call Dietitian?, (see Table 4).

First subcategory: What are the challenges faced by On-call Dietitian?

A major challenge to On-call Dietitian was explicit workload. Both in-house dietitian recognised that 'it is impossible to cover every ward in a government tertiary hospital by On-call Dietitian'. The other participants being less responsive but somehow appear to be agreed with the notion. One also said: "So it's like the objective of On-call is still not cleared, sharp and immeasurable. … 'It is like wasting time if we as On-call Dietitian is not clear with the task to be carry out'. At the end, the goals are not met but 'affected the quality of patient care' and 'physicians, staff nurses will be affected at the

same time if mistake happened'. Another in-house dietitian said that, 'When she was occupied, she would preferably 'only to offer follow-up or dietetic service to her own patients in her ward in-charged' as she echoed that 'counseling is a long process' and 'it involves not just dietary modification but also behavior change'. This explained why there are 'not many participants involved in this FGs did not aware of such On-call program initiated since 2013'. Lastly, for those married, 'it is even difficult when she has to figure out where to send their children'. Until the present, one mentioned that she still 'can commit to the On-call program as the frequency and duration of On-call service is not high and long'. Another in-house dietitian as participant involved remained silent and less responsive in comparison to their peers when refer to commitment.

Table 3. Representative quotes for second category: Redefining On-call Dietitian Residency Program

What is the role of On-call Dietitian?	
"jika ada apa-apa masalah yang berkaitan dengan perubahan diet atau susu pesakit pada hujung minggu" *"If there are any problems related to changes in the patient's diet or oral nutrient formula over the weekend"*	5
"mulakan special feeding kepada pesakit tertentu seperti pesakit Chylothorax" *"Initiate special feeding to certain patients such as Chylothorax patients"*	1
"Agak menyusahkan jika pesakit tidak serasi, jadi jika perlu tunggu hingga ke hari Ahad kesian kepada pesakit. " *"It's quite difficult if the patient is in difficulty, so have to wait until Sunday, feel sorry for the patient"*	5
"beliau akan fine tuning keperluan pesakit seperti tambah keperluan protein dengan menambah myotein" *"He will fine tuning the patient's needs such by adding myotein"*	7
"Dietitian amat membantu untuk optimise feeding pesakit " *"Dietitian is very helpful to optimize patient feeding"*	7
"Kita perlukan Dietitian untuk adjust feeding" *"We need a Dietitian to adjust feeding"*	1
"Oleh itu, saya akan menjalankan rawatan susulan untuk pesakit saya sahaja ketika oncall" *"Therefore, I will conduct follow -up treatment for my patients only during oncall"*	6
"kami juga menjalankan perkhidmatan sajian seperti pemantauan ketepatan diet teraputik dan pemeriksaan penerimaan bahan mentah" *"We also run catering services such as monitoring the accuracy of therapeutic diets and checking the receiving process of raw materials"*	6
"at least kalu kita dah spoken dengan dietitian, dia dah benarkan untuk kami dapat bekalan susu sebanyak ni sehingga hari bekerja" *"At least if we have spoken to the dietitian, he or she allowed us to get the sufficient formula supply for until next working day"*	3
What is urgent referral required attention of On-call Dietitian?	
"Terutama jika kami ada pesakit Miocardiac Infarct (MI) yang masuk wad dan tidak tahu apa diet yang sesuai " "Especially if we have Miocardiac Infarct (MI) patients who are in the ward and do not know what the appropriate diet"	4
"jika pesakit diarhea kita tidak tahu susu apa yang sesuai untuk diberikan kepada pesakit" *"If the patient has diarrhea we do not know what formula is suitable to give to the patient"*	5
"Kami perlu lihat 'electrolyte Imbalance' , ada sesetengah pesakit yang tidak sesuai menggunakan susu biasa" "We need to look at 'electrolyte imbalance', there are some patients who are not suitable to use regular formula"	5
"pesakit yang 'intubated' mengalami masalah-masalah tertentu seperti…..lose, demam, cardiogenic shock atau sepsis. Berkemungkinan, kami memerlukan saranan daripada Dietitian" *'Intubated' patients experience certain problems such as…..loose stool, fever, cardiogenic shock or sepsis. Most likely, we need advice from the Dietitian "*	4
"untuk pesakit dewasa adalah sangat sukar. Jadi mereka mungkin memerlukan lebih kaunseling diet terutama kepada pesakit diabetes" *"For adult patients it is very difficult. So they may need longer duration of diet counseling, especially for diabetics"*	7
What is tangible way to handle urgent referrals?	
"pada saya tiada masalah sekiranya Dietitian response dalam masa 24 jam" *"I have no problem if the Dietitian responds within 24 hours"*	4
"Saya rasa Dietitian tidak perlu ada, sekiranya Dietitian mudah untuk dihubungi" *"I don't think Dietitian shoud be there during weekend, if the Dietitian is easy to contact"*	8
"Dietitian tidak perlu tunggu di hospital sahaja tunggu kes jadi seperti Pasive Oncall. Jika tidak, tidak perlulah datang ke hospital" *"Dietitians do not have to wait in the hospital, just waiting case through Passive Oncall. If there no cases, there is no need to come to the hospital "*	8
"Senang untuk kita hubungi. Macam doctor Passive Call" *"It's easier for us to call for help. Like a doctor Passive Call "*	8
"senang untuk kita hubungi jika ada apa-apa masalah" *"easier for us to contact if there are any problems"*	5

“Kami tiada masalah sekiranya doktor HO/MO bertanya melalui telefon” *"We have no problem if the HO/MO doctor asks over the phone"*	2
“Sebenarnya untuk pengetahuan doktor, kita dah jalankan pasif oncall. Jika ada masalah mereka akan berhubung dengan Dietitian tanpa mengira waktu” *"Actually, for everyone’s information, we have run passive oncall long ago. If there is a problem they will contact the Dietitian regardless of the time"*	2
Suggestion to improve On-call Dietitian Residency Program	
“Jika cuti hujung minggu yang panjang seperti ada hari Cuti Kelepasan Am, Dietitian boleh datang pada waktu pagi” *"If the weekend is extended from Public Holiday, the Dietitian better come to duty in the weekend’s morning"*	8
“Bagi saya, apa yang urgent adalah Dietitian perlu selalu follow up/regular review pesakit kerana kami ada NST yang memerlukan input daripada Dietitian” *"For me, what urgent is the Dietitian should always follow up/regular review of patients because we NST (Nutrition Support Team) that requires inputs from the Dietitian"*	4
“Mesti ada sorang yang bertanggungjawab mungkin seperti pegawai catering yang mengingatkan jururawat untuk periksa diet yang betul diterima oleh pesakit” *"There must be someone in charge maybe like a catering officer who reminds nurses to check the correct diet received by patients"*	7
“Sepatutnya, ada pegawai yang bertanggung jawab. Mungkin dari Pegawai dari bahagian Sajian atau Dietitian” *“Supposedly, there are officers in charge. Maybe from an Officer from the Catering or Dietitian ”*	1
“I rasa dietitian oncall the whole day is better dari oncall selama 4 jam, sebab kadang-kadang dalam masa 4 jam tersebut tiada masalah, tapi bila dah balik ada problem” *"I think dietitian oncall the whole day is better than oncall for 4 hours, because sometimes within 4 hours there is no problem, but after 4pm there is a problem"*	1
“jika ada dietitian oncall bagusla, tapi kena inform wad sebab selama ni, tak tau ada passive call” *"If there is a oncall dietitian, that is great but have to inform the ward because so far, I don't know if there is a passive call"*	3
“Cadangan untuk tinggalkan no telefon untuk dihubungi jika ada kes urgent yang dirujuk dari doktor” *"Suggestion to leave a phone number to be contacted if there is an urgent case referred from a doctor"*	3
“contohnya tinggalkan no telefon. At least kalau tak dapat datang, at least dapat berkomunikasi” *"For example, leave a phone number. At least if can't come to assist, at least we can communicate"*	5

Regular font styles: Original script. Italic font styles: Translated script. Number: Panel involved

Table 4. Representative quotes for third category: Identifying challenges of On-call Dietitian Residency Program

What are the challenges faced by On-call Dietitian?	
“Jadi tidak terasa sangat kerana kita akan ikut giliran 2 bulan sekali. Dari segi komitmen oleh kerana tidak terlaku kerap pada saya tiada masalah” *"So it does not feel any discomfort because we will rotate once every 2 months. In terms of commitment, it doesn't happen any difficulties to me"*	2
“Tetapi sekiranya seorang dietitian perlu menjalankan perkhidmatan klinikal untuk 1 hospital, tetapi hanya untuk 4 jam, pada saya adalah sukar kerana tidak dapat cover pesakit untuk satu hospital ” *"But if only one dietitian has to run clinical services for one hospital with only allowed 4 hours, for me it is difficult because we cannot cover patients for one hospital in that amount of time"*	2
“Oleh itu, saya akan menjalankan rawatan susulan untuk pesakit saya sahaja ketika oncall ” *"Therefore, I will conduct follow -up treatment for my patients only when oncall"*	6
“jika nak oncall, kena tahu objektif oncall” … Bagi saya, jika objektif tidak menepati, tak dapat diukur, ditakuti, akan membuang masa macam tu je” *"If you want to oncall, you need to know the objective of oncall"... For me, if the objective does not meet, cannot be measured, it will waste time like that"*	2
“kebajikan pekerja akan terjejas, objektif tak nampak, workload bertambah. … Contohnya jika ada yang ada family, dia perlu kena fikir nak hantar anak kemana jika tiada pengasuh” *"welfare of Employee will be affected, objectives are not seen, workload will increase. ... For example, if someone has a family, he needs to think about where to send the child if there is no babysitter”*	2
“satu dietitian kena cover semua wad dlm hospital dan tiada penyelesaian yang bagus, kita akan overload dengan kerja” *"One dietitian has to cover all the wards in the hospital and if there is no good solution, we will be overloaded with work"*	6
“Contohnya counselling, it’s a long process, kita perlu mendapatkan diet history dan adjust from there as it is behaviour change” *"For example counseling, it's a long process, we need to get a diet history and adjust from there as it is about behavior change"*	6
“So if you have so many patient and you have to settle the entire ward, you can imagine the quality of the outcome of the patient. It won’t as good as if when we have better pace to manage the patient. And if the work quality isn’t good our other team such as physician, staff nurse will be affected at the same time. Not just the dietetic service”	6

Regular font styles: Original script. Italic font styles: Translated script. Number: Panel involved

Table 5. Representative quotes for fourth category: **Various concerns in ward during On-call shift**

How well do you know about the indication of therapeutic diet?	
"Saya rasa bagi jabatan Paediatrik, banyak doctor atau jururawat tidak tahu diet yang sesuai" *"I think for the Pediatrics department, many doctors or nurses do not know the appropriate diet"*	1
"Kami tidak pandai lagi kirakan kalori" *"We are not good at counting calories"*	1
"Saya rasa ramai yang tidak tahu. Kebanyakan jururawat hanya tahu pengetahuan asas sahaja" *"I think many people do not know. Most nurses only know the basics"*	3
How well do you know about the indication of enteral formula?	
"Saya rasa 3 formula yang saya setakat tahu" "I think 3 formulas that I so far know"	3
"Saya rasa 4. Saya faham jenis susu untuk kegunaan apa" *"I think 4. I understand what kind of these formula used for"*	5
"kita akan lihat cara bancuhan pada tin atau paket dan kotak. Lihat berapa ml air" *"We will look at the label of the formula for dilution. See how many ml of water"*	5
"Kadang-kadang doktor akan bagi arahan RTF mengikut jumlah sukatan air" *"Sometimes the doctor will give RTF (Ryle's Tube Feeding) instructions according to the amount of water"*	3
Do you verify the suitability of therapeutic diet?	
"Tiada yang mengesahkan diet teraputik yang betul diterima kepada pesakit " *"No one verify the accuracy of therapeutic diet received by patients"*	5
"jika betul-betul periksa jenis diet, tiada pegawai yang mengesahkan kerana PPK (Pembantu Prrawatan Kesihatan) yang akan pesan diet pesakit berdasarkan BHT pesakit" *"If really check the accuracy of therapeutic diet, no such proper officer will confirm because the PPK (Ward assistant) will order the patient's diet based on the patient's Bed Head Ticket (BHT)"*	3
"Saya tidak rasa jururawat atau doktor akan sempat untuk lihat diet terima dengan beban tugas di wad yang banyak" *"I don't think nurses or doctors will have time to check the accuracy of therapeutic in ward level with the workload"*	7
Do you verify the drug-nutrients interactions?	
"Jika di Wad Kardiologi, jika pesakit ada bertanya baru jururawat akan terangkan" *"If in the Cardiology Ward, if the patient asks, the nurse will explain"*	5
"Saya rasa jururawat sedar kepentingan interaksi ubatan dengan diet. Seperti contoh pesakit yang mempunyai masalah thyroid mempunyai 'Ryles Tube Feeding' perlu ambil thyroxin 1mg dengan perut kosong" *"I think nurses are aware of the importance of the interaction of medicine with diet. For example, patients with thyroid problems with 'Ryles Tube Feeding' need to take 1mg thyroxine on an empty stomach"*	4
"Hanya 'compliance' daripada pesakit akan ikut atau tidak. Tapi kebiasaanya, mereka akan mengikut arahan" *"Only depend on 'compliance' from patients, whether to follow or not. But usually, they will follow the instructions"*	1

Regular font styles: Original script. Italic font styles: Translated script. Number: Panel involved

Fourth category: Various concerns in ward during on-call shift

For fourth category, we identified five subcategories: (1) How well do you know about the indication of therapeutic diet?,(2) How well do you know about the indication of enteral formula?, (3) Do you verify the suitability of therapeutic diet?, (4) Do you verify the drug-nutrients interactions?(see Table 5).

First subcategory: How well do you know about the indication of therapeutic diet?

Nurses and medical officer participants suggested that they might be 'not good in calorie counting' and 'insufficient knowledge of therapeutic diet indication'. However, one staff nurse participant highlighted that she only knew the 'basis knowledge of therapeutic diet'.

Second subcategory: How well do you know about the indication of enteral formula?

Senior staff nurse participant remarked that she only 'knew about 4 enteral formulas' especially those often used in her ward in-charged. She stated that she 'followed the fluid indication by medical officer in regime dilution' if the admitted patients have not yet optimised by in-house dietitians during weekend. In comparison to her peers, junior staff nurse participant 'knew about 3 enteral formulas' up till the present, she would rather 'refer to the product labeling to dilute the formula' on those referrals not yet seen by in-house dietitians particularly during weekend.

Third subcategory: Do you verify the suitability

of therapeutic diet?

Three participants demonstrated with affirmative attitudes that 'there was no one or officer to verify the diet received by admitted patients. A senior medical officer expressed that 'it was not possible for medical doctors or nurses to carry out this duty as there were multiple concerns in ward'.

Fourth subcategory: Do you verify the drug-nutrients interactions?

Interestingly, participants demonstrated 'staff nurses and medical officers were aware of drug-nutrients interactions. For example, medical officer participant highlighted that 'he often reminded Ryle's Tube Feeding patients diagnosed with thyroid required to administer thyroxin 1 mg with empty stomach'. However, one participant stated the 'compliance drug-nutrients interactions related advice required to be addressed by patients themselves, whether they would want to follow or not'.

DISCUSSION

This FG study is the pilot study to qualitatively explore the perspective of On-call Dietitian residency program among healthcare personnel in a Malaysia government tertiary hospital. Prior to this research, there is no protocol or clear objectives of how to implement this On-call Dietitian program. Therefore, it was all started without early planning or well-structured protocol by Ministry of Health to discuss the term and impact in detail. For the beneficial of patient outcomes, this On-call service program running by in-house dietitians has been put into practice for almost 6 years. Therefore, this study is to summarise the perspective among healthcare personnel involved in government tertiary hospital, where authors would keen to look for perception among healthcare personnel, a tangible protocol to underline the structure of the program, challenges, as well as other concerns raised.

Looking in more detail at the first category, it was found that awareness of On-call Dietitian Residency Program is poor. Again, nearly all staff nurse, medical officer and physician participants agreed that they did not require On-call Dietitian to handle urgent referrals up to this point. In this context, author would wish to highlight that the program is still considered at early infancy stage, therefore, there were no database to support the needs of On-call Dietitian to handle urgent referrals. In fact, dietitians have been historically working in adult acute services for few decades (10). In facing the large number of referrals in daily routine, dietitians have to be selective and decide which patients need the most urgent dietetic intervention and prioritise their referrals accordingly. Therefore, it was believed that healthcare personnel may work hand in hand to define the urgency referrals according to contribution of dietitian in daily acute services.

In spite of all these, majority of them gave positive responses on this initiated effort and supported the fact that it would provide beneficial outcome to patients at the end. Concordant with the similar findings of previous On-call studies among neurology physician in a Spanish general hospital, author believes the similar positive outcome would be replicated in this program under long run particularly in improving the quality of attention to the patient, reducing the duration of admission and improving the nutrition status of patients (11). Since nutrition status impacts significantly on health-related outcomes, effectiveness of medical treatments, and cost of care (12).

In hospital, admitted patients often miss multiple meals owing to being kept on "nothing by mouth" instructions for medical tests and procedures. Sometimes, there were kept on NBM due misleading instruction. Some begin to lose muscle mass at a rate of 0.5% of total body muscle mass per day, which can lead to malnourished very quickly (13). Therefore, participants still highlighted that the role of On-call dietitian should focus on 'initiation', 'adjusting', 'opmitising' feeding regime especially in follow up referral. The statement is concordance with the evidenced found by Eckert and Cahill in their CMAJ article, an effective strategy for preventing malnutrition is to involve the dietitian early, within 24 hours of hospital admission (14). Nevertheless, he or she needs to ensure respective ward in different departments obtain sufficient oral nutrition supplement beverage to feed patients. Ideally, randomly checking patients' therapeutic diet is considered essential from the conversation of participants. Study found inaccurate of meals provided to patients on in a tertiary public hospital can be as high as 25-52% (15).

So far, there were no studies to define 'urgent referral' in scope of dietitians. A latest study carried out to identify predictors and different medical conditions for dietitian referrals in Austrian hospital settings (16). Results indicated that involvement of dietitian urgently needs to be improved. In fact, there were no significant predictors rather than malnutrition to indicate dietitian referral in this study. Therefore, this FDs provided a good insight that patient experienced with diarrhea, electrolyte imbalance, intubating, sepsis, cardiogenic shock, or uncontrolled diabetes could be the predictors for the attention of On-call dietitian.

To handle urgent referral, nearly all participants agreed 24-Hour passive On-call were a better option rather than 4-Hour On-call program held during one of the weekends. Besides, 'easily contactable' was another term emphasised by 3 participants in the FGDs. However, these suggestions could be most likely the participants aware the number of On-call dietitian was merely one man how. Unlike On-call studies from UK hospital pharmacy services, allied health considered medicines advice is an integral part of the pharmacy on-call service (17). Nearly 80% of them provided training prior being on-call with existing standards for documentation of medicines advice.

Similarly, to the above discussion, participants attributed that broadcasting the 4-Hour On-call services is the immediate action that need to be taken. As the impact of such program could hardly be alert if there was no promotion being carried out. Besides, leaving phone number of in-charged On-call dietitians as respective ward is essential. This service is utterly critically to be arranged or

might consider to be extending during long public holiday as Malaysia is multiracial country. In spite participants realized there is one On-called dietitian on duty, up to this point, inspection of therapeutic diet served in ward can't be overlooked. Author suggested a random spot checking can be held to ward where there are referrals need to be handled at that time.

FGs conducted revealed that other professions support the idea of 24-Hour On-call rather 4-Hour due to beneficial of patient's outcome and better work flow and communication. However, resident dietitian involved in this program attributed that those she might be overload with work load. She mentioned that it creates negative impacts herself and her family life. While on-call work scheduling may not come with human costs, On-call employees must plan their lives and the lives of their families around a call schedule. Previous study concluded workers who extend their duty in late afternoon and evening shifts has been related to increased stress for both workers and their families (2). It is thus not surprising that researchers have found that on-call work patterns can have a major influence on employees' lifestyles and their interactions with family members and friends (18). However, the health effects of on-call work, where workers are called to work either between regular hours or during set on-call periods has not merited as much attention.

Another challenge needs to be addressed is the unclear objectives and the lack of complete standard of procedures at the present. Dietitian participants echoed there was lack of such complete documentation. Therefore, the immeasurable work quality does not highlight the impact of service but aggravate existing outcome of work quality. Worst, other allied health that works close with us might be affected as well. These often oblige employee's willingness to restrict their on-call activities.

The current body of literature on nurses' nutritional knowledge regarding therapeutic diet regimens revealed that most of them had limited knowledge about low-cholesterol diets and sources of water-soluble fiber, fatty acids and the specific food items (19). The study addressed that there is an urgent need to update the contents of nutrition education for nurses. This FDs explicit similar context where nurses and medical officer participants suggested that they might 'not good in calorie counting' and 'insufficient knowledge of therapeutic diet indication'.

However, HCPs have reported being inadequately equipped, in terms of knowledge and resources, to manage malnutrition due to lack of nutritional training (20). Studies reported time constraints have been noted as barriers. These finding was coherence to our finding whereby non-dietetic participants in this FGs reported there were lack of knowledge in oral nutrition supplement. Limited evidence indicated the impact on patients' outcome, however, the inappropriate ONS usage should be resolved or avoided at all cost.

An observational study published in 2016 demonstrated therapeutic meals of 67 patients occurred 19.9% of errors out of total 347 meals. A large proportion of these errors were critical (64.8%) (21). These data illustrated participants in FDs high lighten the critical of checking therapeutic meals at the point of ward level. Participant also agreed the checking process required a certain level of diet knowledge. Thus, dietitian or food service dietitian is the best candidate to ensure prescription of these diets able to adequately meet their nutritional requirements.

Drugs can interact with nutritional compounds, and their pharmacokinetics can be affected by a patient's nutritional status (22). These effects can be clinically positive or negative and vary in significance. Senior staff nurse and medical doctor in this FGs sound affirmative where they were confidence that most nurses and medical officers aware of this interaction significantly affect patients' outcome.

In conclusion, this study has provided a commentary on the dietitian on-call service and an in-depth look at what an on-call service can provide based on the real life experience in a Johor government tertiary hospital. It has found that the participants expressed positive comments about the 4-hour on-call weekend cover. However, to look into much more representative result, a multi-centered qualitative research is necessity to address the role of On-call dietitian.

In order to enhance the quality of on-call service, author would like highlight a few criteria. Firstly, it was necessary to considered developing competence guideline of on-call duties under national allied health act. Under the proposed bill, it should assist in determining scope of practice of on-call dietitian and establish systems to ensure no-one practices outside his/her scope of practice. Secondly, On-call referral should be developed. These were largely due to inappropriate referrals. Dietitian should not expect other disciplines to have an in-depth understanding of the effectiveness of medical nutrition interventions in varying circumstances. Therefore, by developing on-call referral, it not only offers excellent opportunities to educate others on the role of on-call dietitian but achieve beneficial effect to patients suffering varying illness condition. Lastly, emergency duty protocols need to be developed. This written protocol should help provide a safe framework for basic practice, enabling on-call clinical dietitian to make clinical decisions within the scope of their own knowledge and experience. From this study, despite the majority of hospitals having a written emergency duty protocol, these offered guidance on service provision rather than guidance on patient care. This type of protocol would therefore not assist inexperienced on-call dietitians in making decisions and implementing appropriate treatments for specific conditions. Professional groups should be working to developing on-call clinical guidelines among profession of dietitian which will help them with decision making in the on-call situation.

Strengths and Limitations. Concerning single center study, the general result may not represent the actual experience in other part of Malaysia. In spite of language concordance was not achieved, the moderators are familiar with the respective communities; therefore, it has no influence to the follow up questions. Further, participants in this study contributed almost equally throughout the session due to longer and comfortable session was

allowed. Finally, the present study used qualitative design with open-ended questions to encourage discussion in the group sessions. We used this method to obtain an in-depth understanding of each individual HP's perception toward the program.

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AUTHORS' CONTRIBUTION

Semi-Structured Questionnaire was developed by the members (Kong Jian Pei, Fatimah bte Othman, Norshariza Jamhuri, Basmawati Baharomfrom, Dr Hamdan Bin Mohamad, Zarina bte Samsudin, Khalizah bte Jamli, Lina bte Isnin, Siti Farrah Zaidah Mohd Yazid, Kartini Abdul Karim, Hamidah Ahmad, Rozalina bte Idris, Norafidza Ashiquin Abd Patah Muhammad Faiz Abdul Aziz, En Muhamad Arif Abdullah) of Technical Committee of Dietetic Quality and Research Bureau, Ministry of Health, Malaysia (Teknikal Biro Kualiti dan Penyelidikan Profesion Pegawai Dietetik Kementerian Kesihatan Malaysia). The corresponding investigator involved in the design of the study, analysis and interpretation of the study. Pn.Fatimah Othman involved in the data collecting, facilitating and analysing of the study. Mr.Kong Jian Pei participated in drafting, writing, and editing manuscript; Pn.Basmawati Baharom has reviewed and provided second opinion to the manuscript. All authors have involved in reviewing and approving the final version of the manuscript. All authors affirm that the content has not been published.

CONFLICT OF INTEREST

The authors declared no conflict of interest. This study was supported by Ministry of Health, Malaysia (number: NMRR-19–3818-52373).

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Research Note

Enhancing the Skills and Competencies of Nutrition and Dietetics Students in the Philippines to Manage COVID-19 by Reinforcing Hospital Practicum Programs

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ABSTRACT *Background:* Undergraduate students of Nutrition and Dietetics (ND) in the Philippines are required to complete 600 hours of the hospital dietetics practicum program in the senior year. However, training hours allotted to the management of highly infectious diseases like COVID-19, are minimal. The current health situation necessitates a review of the undergraduate hospital practicum to enhance relevant skills and competencies. This study aimed to improve the existing hospital dietetics training or undergraduate hospital practicum by the inclusion of learning outcomes that would enhance skills and competencies of the students to manage COVID-19. *Methods:* In this qualitative study, individual interviews of Registered Nutritionist-Dietitians (RNDs) in selected dietary departments and focus group discussions (FGDs) with the Chief Dietitians were used as the main methods of data collection. Results from the interviews and FGDs were used as the basis for an addendum to the hospital dietetics practicum manual that was recommended to the Council of Heads and Deans of Nutrition and Dietetics (CODHEND). *Results:* Interviews and FGDs substantiated the key challenges that the student affiliates encountered during the practicum and the innovations the dietary departments implemented to address the limitations in operations due to the COVID-19 pandemic. The proposed addendum to the practicum manual included recommendations for the; (1) patient care unit, particularly on the communication systems between admitted and discharged patients and the dietetics team; (2) food service and administration department, specifically on the standardization of the protocol for procurement, handling, and storage of the supplies for the dietetics department for the continued operations of COVID wards; and, for (3) the education and research unit, specifically for developing appropriate materials and on the execution of nutrition education sessions and online nutrition consultations. *Conclusion:* Inclusion of the recommended learning outcomes and activities in the current hospital practicum of BSND students in the context of the COVID-19 pandemic was seen to be essential in ensuring that students are equipped with related knowledge and skills to provide quality nutritional care even during unprecedented health situations.

Keywords Hospital Dietetics Practicum, COVID 19 Education

INTRODUCTION

The COVID-19 pandemic significantly altered global health systems. Frontliners, particularly Nutritionists-Dietitians (NDs), were expected to provide essential nutritional care to COVID-19 patients. However, BSc Nutrition and Dietetics students in the Philippines, prior to the pandemic were trained mostly on how to manage non-communicable diseases (NCDs). Management of infectious diseases was not given much emphasis. At present, significant changes in the implementation of the hospital dietetics practicum are needed to ensure that students are prepared to manage unprecedented situations like pandemics.

Objectives: The study aimed to enhance the existing hospital dietetics practicum to include additional learning outcomes in the hospital practicum manual designed to equip BSND students with the necessary knowledge and competencies to manage situations like COVID-19. Specifically, the study was also able to:

1. Identify measures employed by nutrition and dietetics department of hospitals to address COVID-19;
2. Combine the findings from the preliminary survey and consultative meetings in the existing hospital dietetics practicum program; and
3. Create the addendum for the hospital dietetics practicum manual

METHODS

***Ethical clearance application*:** All volunteers who participated in the study gave written informed consent to the protocol, which was approved by the College of Home Economics - Research Ethics Committee (CHE-REC), University of the Philippines, Diliman, Quezon City (Reference # CHE-REC 2021-002).

Study Design: This qualitative study gathered data through interviews and FGDs. These methods enabled the researchers to have a deeper understanding of the processes and modifications employed by nutrition and dietetic departments in tertiary hospitals in the Philippines that enabled them to manage patients and dietetic services during the COVID-19 pandemic. The measures taken by institutions in dealing with the COVID-19 situation

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were used as the basis for the additional learning outcomes.

Study Site: The study was conducted at the Department of Food Science and Nutrition (DFSN), College of Home Economics (CHE), University of the Philippines, Diliman Quezon City, as spearheaded by the Breastmilk Research Laboratory in collaboration with the DFSN-CHE Nutrition Clinic. The interviews and FGDs were coursed through remote platforms such as Google Meet and Zoom.

***Study Participants*:** Participants of the study were selected based on the criteria outlined in Table 1. The study used purposive sampling to achieve the study objectives. Tertiary hospitals were selected based on the following criteria: a) should be a COVID-19 referral hospital; b) should be in places with high recorded cases of COVID-19; and c) should be accepting BSND dietetic interns.

Table 1. Criteria for selecting participants in phases 1 and 2 of the study.

Study period	Inclusion criteria	Exclusion criteria	Withdrawal criteria
Phase 1 (Individual RND interview)	a. RND should be employed in a hospital in moderate to high-risk sites of COVID-19 as classified by DOH b. RND should be employed in level 3 training hospital c. RND should be employed in hospitals that serve as referral centers for COVID-19 patients d. RND should be employed in hospitals that accept BS Nutrition and Dietetics student affiliates	RND, who is at most 1 month, employed in the selected hospital	RND who feels/decides to discontinue his/her participation in the study for any particular reason
Phase 2 (Focus group discussion with Chief RNDs)	a. RND should be employed in a hospital in moderate to high-risk sites of COVID-19 as classified by DOH b. RND should be employed in level 3 training hospital c. RND should be employed in hospitals that serve as referral centers for COVID-19 patients d. RND should be employed in hospitals that accept BS Nutrition and Dietetics student affiliates	RND who is at most 1 month employed in the hospital	RND who feels/decides to discontinue his/her participation in the study for any particular reason

For phase 1, the participants for the in the individual interviews were RND staff from the selected hospitals. For phase 2, participants were the chief dietitians of the eligible hospitals.

During the recruitment, formal letters were sent both directly to the dietitians and their institution for approval to conduct the study. Among the identified hospitals, Phase 1 of the study included RNDs from four hospitals in the National Capital Region (NCR), one hospital in Visayas, and one hospital in Mindanao. A total of nine RNDs were interviewed in Phase 1. Phase 2 of the study included the chief dietitians from two hospitals in NCR and one hospital in Visayas. A total of four chief dietitians participated in the focus group discussion of the study.

Study Proper: In phase 1 of the study, individual RNDs from eligible hospitals were interviewed remotely via Google Meet and Zoom. The interview covered the following topics: 1) safety practices for on-site duty; 2) presence/absence of online consultations; 3) changes in the menu/meal planning for admitted COVID and non-COVID patients; 4) changes in the food service department in terms of meal preparation; and 5) changes in the management of hospital and dietary services.

For phase 2 of the study, FGDs were conducted among the chief dietitians of the selected hospitals. The FGD covered the COVID-19 related skills and knowledge needed by the students to achieve the learning objectives from the academe. Similar questions were also asked from the staff RNDs to validate the results of phase 1.

For the terminal phase, the researchers presented the results to the Board members of the Council of Deans and Heads of Nutrition and Dietetics (CODHEND) for the discussion, approval, and incorporation of the addendum to the existing hospital dietary practicum manual. CODHEND is an organization composed of the deans and heads of schools in the Philippines offering Nutrition and Dietetics. It is the organization responsible for ensuring that the recommended curriculum would be adopted by educational institutions offering BSND programs, as well as monitor the program's conduct in each educational institution to maintain excellent standards in Nutrition and Dietetics education (1). One of its goals is to provide activities that will upgrade and maintain the quality of professional education in nutrition and dietetics for global competitiveness. The meeting with CODHEND took place on May 6, 2022, through an online platform (Zoom).

RESULTS AND DISCUSSION

Based on the interviews with the RNDs and the FGDs among chief dietitians, the identified key challenges were grouped into three major

categories: patient care; food service and administration; and education and research.

Patient Care: For the patient care category, it was seen that the communication systems for the admitted and discharged COVID-19 patients were significantly affected. Due to the pandemic, RNDs had limited interaction with patients and relied heavily on the charting system of the hospital. This became a challenge in the conduct of sound nutritional assessment and counseling of the patients. Similarly, this challenge has been observed among discharged patients wherein the RNDs are only limited to interacting with the relatives and caretakers instead of the patients themselves. In addition to the communication systems, another major change that the pandemic brought to the current practicum is the shift to remote platforms, and this led to students to work on sample case studies instead of observing and managing actual patients.

For the recommendations, the researchers suggest that students be asked to assist in the development of a more digitized and centralized communication system both for the monitoring of admitted patients and monitoring of discharged patients. To address the concern of using sample case studies, the research team recommends that students be included to provide support for the actual healthcare team even by simply allowing them to document the delivery of nutritional care to minimize their risk of becoming infected. This practice will allow students to become better acquainted with the role of NDs in the overall management of patients with COVID-19, or with other infectious diseases.

Food Service Administration: For the food service administration, the change seen in the usual protocol was in the preparation for procurement, handling, and storage of supplies that were specifically added due to the COVID-19 pandemic. These additional supplies included provision of disposable utensils, bottled water, and oral fluid nutritional supplements (nutritionals) for some of the hospitals. The research team proposes that students develop a standardized protocol for the food service section which considers changes for the tray line procedures and the need for additional supplies for COVID/infectious diseases wards. Students should be guided on how to adjust the procurement, storage and handling of the identified additional supplies for these wards.

Education and Research: For the education and research unit, the identified challenge was preparing audience-sensitive and audience-appropriate education materials and lecture plans on nutrition and infectious diseases. As a recommendation, the researchers propose that students be exposed to selecting their target audience and preparing appropriate nutrition education tools for their seminars and webinars. Also, the researchers suggest that the online nutrition consultations be conducted only after both the institutions and students have undergone the necessary training for conducting remote activities. Current systematic reviews have arrived at the conclusion that online consultations, or telemedicine, are found to be effective as they increase efficiency in health services and technical usability. Telemedicine interventions that were found effective in reducing health service use included vital sign monitoring at home with telephone follow-ups, computerized education programs, and home monitoring of diabetes patients. Technical reliability of online consultations was also found satisfactory in the home monitoring of heart failure patients (2). Aside from increased efficiency and reliability, patients were found to be more inclined to participate in online consultations as it cuts down on the travel time needed to get follow-ups with their healthcare providers (3). These identified advantages of online consultations appear to be a significant reason for introducing and adapting to digitized systems for healthcare which includes nutritional care.

Table 2 summarizes the proposed addendum as recommended by the research team. The addendum includes recommended intended learning outcomes, teaching-learning activities, major activities/teaching aids, assessment tasks, and evaluation tools categorized into the main three areas: a) patient care; b) food service administration; and c) education and research.

During the discussion with CODHEND, the Board panel approved and accepted the addendum for immediate inclusion in the existing hospital dietary practicum manual for BSND students, which will be available for publication in AY 2022-2023. Studies conducted in the US (4,5), Australia (6), and Norway (7), have shown that there was a decrease in the quality of education and internships during the pandemic as perceived by ND students. The pandemic has impacted not only the developing countries, but even the more economically developed countries. The lack of face-to-face rotations and the limited learning tools that were made available due to the abrupt shift to remote learning during the pandemic has affected the quality of training given not only to ND students but even to other healthcare professions. The unforeseen need for rapid transfer from the traditional to the use of remote platforms for all learning activities presented compulsory modifications for the hospital dietitians, clinical instructors, and learners. One of the challenges faced during the use of remote learning was addressing student assessment as certain factors had to be considered, such as pandemic-related anxiety that might have had negative effects on the student's academic performance; the effect of economic and resource differences between students, and the capability of instructors to effectively deliver high-quality instructions remotely (8). Some students who were able to experience remote learning found that the non-traditional method raised the pressure among students as they were expected to learn things on their own, not considering the gaps in the resources available (9). Consequently, students enrolled in the sciences, such as in the fields of biology and chemistry, and those that needed to conduct experiments, found that remote learning can be entirely limiting as it interferes with the opportunity to debate, deliberate, and discuss with their professors and classmates, and the learning of practical and clinical work (10,11).

Table 2. Summary of the addendum recommended by the research team for inclusion to the existing BSND hospital practicum manual

PROPOSED ACADEMIC ACTIVITIES FOR THE HOSPITAL PRACTICUM OF BSND STUDENTS				
INTENDED LEARNING OUTCOME (ILO)	**TEACHING-LEARNING ACTIVITIES (TLA)** (e.g lecture/ videoclip)	**MAJOR ACTIVITIES/ TEACHING AIDS**	**ASSESSMENT TASK** (Recitation/ quiz/ exam)	**EVALUATION TOOL**
A. PATIENT CARE				
1. Develop a communication system including the healthcare group of an admitted patient - Evaluate the efficiency and efficacy of the current communication system implemented in the institution - Propose an improvement plan for the communication system in the institution to include all members of the health care group of a patient	**A. Hospital care plan** - Orientation on the healthcare group of a patient **B. Charting** - Orientation on reading patient's medical charts - Practice charting for nutrition-related concerns of the patient **C. Nutrition innovation and technology** - Assess the current communication system implemented in the institution for the healthcare group of a patient - Develop an automatized communication system for the healthcare group of the patient	A. Documentation (Charting) B. Guide on writing a project plan	A. Actual charts for patients B. Learning log C. Project plan for communication system development	Rubrics for Project Plan
2. Modify the monitoring and follow up system for out-patient individuals and patients released from hospital - Organize an automatized user-friendly monitoring and follow up system for out-patient individuals and patients released from hospital	**A. Nutrition innovation and technology** - Propose a monitoring and follow up system **B. Nutrition surveillance** - Monitor the changes in the nutritional status of the individuals	A. Nutrition Care Plan B. Guide on writing a project plan	A. Monitoring plan for the patient B. Project plan for monitoring and follow up system	Rubrics for NCP Rubrics for Project Plan
3. Prepare and present a case study based on an actual patient diagnosed with COVID-19 with and without comorbidities	**A. Prepare** a case study of a specific patient in the affiliated hospital **B. Present** the case study that includes the nutrition-related pathophysiology and the application of Nutrition Care Process (NCP) to the dietitians of the affiliated hospital	A. Case study format B. Evidence-based information about the case patient C. Nutrition Care Process (nutrition assessment tool, nutrition care plan) D. Diet list/handouts E. Clinical Nutrition Pocket Guide	A. Nutrition Care Process (NCP) application B. Personalized diet plan C. Oral case presentation D. Written case report	Rubrics for Oral Presentation Rubrics for Written Report
B. FOOD SERVICE ADMINISTRATION				
1. Assist in the preparation for procurement and receiving of dietary department supplies	**A. Participate** in the preparation of procurement list for the dietary department taking into account the specific	A. Diet list B. Procurement forms C. Receiving and storage protocols	A. Learning log	Rubrics for learning log

PROPOSED ACADEMIC ACTIVITIES FOR THE HOSPITAL PRACTICUM OF BSND STUDENTS				
INTENDED LEARNING OUTCOME (ILO)	**TEACHING-LEARNING ACTIVITIES (TLA)** (e.g lecture/ videoclip)	**MAJOR ACTIVITIES/ TEACHING AIDS**	**ASSESSMENT TASK** (Recitation/ quiz/ exam)	**EVALUATION TOOL**
	considerations for COVID ward B. **Assist** in the receiving and storage of procured items for the dietary department			
C. EDUCATION AND RESEARCH UNIT				
1. Devise a set of nutrition materials for educating patients regarding COVID-19 and infectious diseases both in remote setup and onsite	**A. Create** nutrition education materials regarding the prevention of COVID-19 virus transmission and infection, ways to address when one gets the virus, and what to do during treatment	A. Instructional materials	A. Actual instructional materials output B. Learning log	Rubrics for nutrition education materials
2. Conduct a Nutrition education session about COVID-19 and infectious diseases on one population group in the out-patient department	**A. Design** a learning plan for the selected target group **B. Create** instructional materials for the nutrition education session both for remote platform and onsite **C. Conduct** an actual nutrition education session with the selected target group	A. Instructional plan for nutrition education session B. Instructional materials for nutrition education session	A. Actual instructional materials output B. Actual nutrition education session	Rubrics for instructional plan and materials Rubrics for the conduct of nutrition education session Post-evaluation from attendees
3. Conduct a webinar or a seminar for the staff of the institution regarding infectious diseases such as COVID-19, typhoid, cholera, small pox, and AIDS	**A. Design** a learning plan for the selected target group **B. Create** instructional materials for the nutrition education session both for remote platform and onsite **C. Conduct** an actual nutrition education session with the selected target group	A. Instructional plan for nutrition education session B. Instructional materials for nutrition education session	A. Actual instructional materials output B. Actual nutrition education session	Rubrics for instructional plan and materials Rubrics for the conduct of nutrition education session Post-evaluation from attendees
4. Participate in an online nutrition consultation dealing with various nutrition concerns	**A. Conduct** an actual consultation by practicing NCP	A. NCP B. Assessment forms for e-nutrition consultation	A. Actual assessment B. Actual conduct of e-nutrition consultation	Rubrics for NCP

To maintain the excellence of Nutrition and Dietetics programs, hospital practicums should be able to maximize the use of remote learning to adapt accordingly. Kaup and colleagues in 2020 stated that shifting to remote platforms has encouraged students to be more inclined to problem-solving, critical thinking, and self-directed learning. It also allows more flexibility in the learning process, as learning materials can be given in advance and students will be able to go through the courses at the pace that they deem effective for their own learning. Online learning and training have also made distance education possible as experts from different places may still be able to conduct synchronous sessions, which involve online studies and live chats with the students (12). These identified benefits of online learning can be used as an advantage to continuously provide quality education and training for BSND students despite unprecedented health situations. The adaptability of the education system and training practices to varied challenging health situations help ensure that students get the competencies needed for entry-level jobs as they enter the workforce amidst such situations. As cited by Rogus et. al, the pandemic has encouraged the academe and other learning institutions to reinforce additional strategies, including redesigning assignment formats, changing grading and late work

policies, and providing additional resources to students. Similarly, hospital training programs delivered during pandemics should still be able to provide realistic scenarios for ND students despite limitations to mobility (13).

CONCLUSION

The pandemic has forced the practice of healthcare to evolve in the Philippines. Accordingly, the skills, knowledge, and competencies of future healthcare professionals, particularly of Nutritionist-Dietitians, need to be strengthened in preparation for similar future scenarios. COVID-19 may not be the only pandemic that future healthcare professionals will face, which is why it is imperative that students are presented with activities that will provide them with relevant skills to adapt. Integrating the academe's onsite learning into more innovative and digitized systems will benefit not just BSND students but also the entire healthcare team and the patients themselves.

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