



Nutrition Training Policy among Health Professionals in Community Health Centers and Sub-Centers in Indonesia

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Abstract: Professional health workers in community health centers and sub-centers are required to provide nutrition services. However, nowadays not all community health centers and sub-centers have nutritionists, so all health workers need to have strong teamwork to ensure nutrition programs can occur effectively. This study aimed to describe the types of professional health workers and their history of receiving training in nutrition. This study used IFLS (Indonesia Family Life Survey) 2014-15 from the Community Facility Book to address the health worker's experience in nutrition training. The result of this study revealed that medical doctors had more experience in attending the training in nutrition. Even though there was limited training in the last 12 months. This situation might occur due to the limited number of health workers who can join the training or the limited budget to provide training to all health workers. Education about nutrition is essential to all health workers, not only nutritionist because community health center/sub-centers is the closest health services in the community. Preventing the prevalence of stunting and other health-related nutrition problems can be done by educating health workers immediately.

Keywords: Community health center; Nutrition; Professional health workers

Introduction

Nutrition training among healthcare professionals in community health centers is essential for improving patient outcomes and promoting overall health (Crowley et al., 2019). Numerous studies have emphasized the importance of incorporating nutrition education into medical training to equip healthcare professionals with the necessary knowledge and skills to address patients' nutritional needs (Crowley et al., 2019; Jones et al., 2023; Lepre et al., 2021; Van Horn et al., 2019). These studies highlight that foundation nutrition education provided in medical training should enable graduates to initiate conversations with patients about nutrition and recognize when referral to other healthcare professionals, such as registered nutritionists

or dietitians, is necessary (Crowley et al., 2019). In addition to medical doctors, involving allied health professionals, such as registered nutritionists, registered dietitians, and nutrition-trained nurses and pharmacists, in multidisciplinary teams during clinical and community training can enhance the nutrition knowledge and interprofessional skills of future healthcare professionals (Jones et al., 2023). This collaborative approach ensures that patients receive comprehensive and evidence-based nutrition care. Furthermore, nutrition-trained healthcare professionals play a vital role in the safety and effectiveness of dietary interventions, particularly for specific populations such as adolescents with obesity (Hoare et al., 2021). Their expertise is essential in designing and implementing dietary interventions that meet the unique nutritional

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needs of individuals and promote long-term behavior change (Hoare et al., 2021).

To effectively train healthcare professionals in nutrition, it is important to consider the curriculum and content of their education programs. Incorporating public health training and experience into dietetic training programs can enhance the capacity of registered dietitian nutritionists (RDNs) in public health and community nutrition (El-Kour et al., 2021). Additionally, nutrition content within education programs and accreditation standards for healthcare professionals should align with the nutrition requirements necessary for providing effective nutrition care (McMonagle et al., 2023).

However, there are challenges and barriers to adequate nutrition care and training for healthcare professionals. Limited human resources, lack of infrastructure, high workload, and inadequate knowledge about nutrition are some of the barriers identified (Tramontt et al., 2021). Overcoming these barriers requires in-depth nutritional refresher training, including topics such as community-based management of acute malnutrition, identification of malnutrition, and communication skills (Mehta et al., 2022).

Nutrition training among healthcare professionals in community health centers is crucial for improving patient outcomes and promoting overall health. Incorporating nutrition education into medical training, involving allied health professionals in multidisciplinary teams, and addressing the barriers to adequate nutrition care and training are essential steps in ensuring that healthcare professionals are equipped with the necessary knowledge and skills to provide effective nutrition care to patients.

In the Indonesian context, the community health center is required to provide nutrition curative and preventive, especially for mothers and children. According to regulations established by the Indonesian government, the Community Health Centre needs to give nutrition education in order to improve the nutrition level in society, including decreasing the maternal mortality rate to 306 per 100,000 live births and decreasing the infant mortality rate to 24 per 1000 live births (Ministry of Health Indonesia, 2018). Individual nutrition education is covered by promotive, preventive, curative, and rehabilitative. Health professionals in community health centers need to diagnose the nutrition problem to arrange preventive ways immediately (Indonesia, 2009).

Implementing the nutritional care process at community health centers requires cooperation from various professions (teamwork) (Indonesia, 2014; Ministry of Health Indonesia, 2014a). Currently, not all community health centers have professional staff in the

field of nutrition. The competency of nutritionists in the teamwork approach does not play an optimal role and tends to overlap, so it is necessary to understand the concept of collaboration based on their respective competencies (Ministry of Health Indonesia, 2013, 2014a, 2014b). Moreover, the surveillance of nutrition is required to prevent health problems due to malnutrition or obesity and other nutrition problems (Ministry of Health Indonesia, 2019). This study aims to describe the percentage of professional health workers in community health centers who have trained in nutrition in Indonesia.

Method

Sample and Procedure

The IFLS-5's community facility survey component's data were examined in 2015. An ongoing longitudinal socioeconomic and health survey of Indonesian homes, communities, and service providers known as the IFLS was first conducted in 1993 and is based on a sample of households from 13 of the country's 27 provinces (SurveyMeter, 2015). About 83 percent of Indonesia's population was located in these 13 provinces as of 1993. The IFLS-5 is a development of the IFLS that extends the panel to 2015. The IFLS-5's community facility survey gathered information on qualified healthcare personnel working in community health centers and sub-center.

Professional health workers were sampled in each of the 321 enumeration areas (EAs) in 13 of 27 provinces: 4 provinces on Sumatra (North Sumatra, West Sumatra, South Sumatra, Lampung), all 5 Javanese provinces (DKI Jakarta, West Java, Central Java, DI Yogyakarta, East Java), and 4 provinces covering the remaining major island groups (Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi). The community-facility survey (instruments and procedures) was pretested in both rural and urban areas (Strauss et al., 2016). The questionnaire was developed in English and initially translated into Bahasa Indonesia by the survey staff, and then re-translated into English by 2 independent outside translators.

The IFLS has been approved by the ethics review boards of the RAND Corporation and the University of Gadjah Mada in Indonesia (SurveyMeter, 2015). Informed consent was attained from all respondents prior to assessments.

Measures

This study focused on the questionnaire for community health center and sub-center (Puskesmas/Puskesmas Pembantu) book B. In this book, section H: Facility vignettes was chosen to be the main variable. It was question number H32 (Can you

please tell me your qualifications?). The options consist of a medical doctor, medical doctor specialist, nurse, midwife, and paramedic. However, we excluded the medical doctor specialist due to the limited number of participants. Questions H35_5 was asked, "Have you ever received training in nutrition after you finished the study?" (yes/no). Question H36_5 asked "In the last 12 months?" (yes/no). Question H37_5 asked "In the last 5 years?" (yes/no).

Data Analysis

Descriptive statistics were calculated to describe general information about professional health workers in community health centers and sub-centers. Bivariate analysis was done using the Chi-Square test to examine the correlation between type of professional health workers and training in nutrition. The data includes percentage and frequency. Moreover, the *crosstabs* were done to see the distribution of each professional health worker and nutrition training. All analyses were done with STATA software version 17.0 (Stata Corporation, College Station, TX, USA).

Result and Discussion

Table 1 below describes the distribution of type professional health workers in community health centers and sub-centers. It was shown that the majority of respondents in this study were midwives (41.32%), followed by medical doctors (36.28%), nurses (20.61%), and paramedic (1.79%). According to the gap between government officers and non-government officers in community health centers and sub-centers, it was revealed that since the health facility survey in 2011 and the health workers survey in 2017, it has increased from 25.74% to 47.41% (Nugraha et al., 2020; Rahman &

Puspitasari, 2020). The problems of human resources in community health centers and sub-centers are not only about the type but also the source of salary.

Table 1. Distribution of Health Professionals

Health professionals	Frequency	Percentage
Medical doctor	345	36.28
Nurse	196	20.61
Midwife	393	41.32
Paramedic	17	1.79

Table 2 below explains the correlation between the type of health professionals and training in nutrition for those who work in community health centers and sub-centers. According to those who have ever received training in nutrition, about half of them were medical doctors (48.48%) followed by midwives (37.27%). In the opposite way, most of the nurses have not received training in nutrition (79.02%). It also found a correlation between the type of professional health workers and receiving training in nutrition (*p-value 0.000*).

About those who received training in nutrition in the last 12 months, it was shown that almost all health professionals have not, except medical doctors (43.40%). All of the paramedics reported that they had not received training in nutrition in the last 12 months. Receiving training in nutrition did not find a correlation to the type of professional health workers (*p-value 0.196*). Moreover, for receiving training in nutrition in the last 5 years, it was found the majority of all types of professional health workers have received training in nutrition in the last 5 years, such as medical doctors 77.78%, nurses 72.22%, midwives 73.75%, and paramedics 75.00%. However, the type of professional health workers did not have a correlation to receiving training in nutrition in the last 5 years (*p-value 0.921*).

Table 2. The Bivariate Analysis of the Type of Health Professionals and Training in Nutrition

Health professionals	Received training in nutrition (n=814)		In the last 12 months (n=316)		In the last 5 years (n = 192)	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
Medical doctor	159 (48.48)	169 (51.52)	69 (43.40)	90 (56.60)	70 (77.78)	20 (22.22)
Nurse	30 (20.98)	113 (79.02)	12 (40.00)	18 (60.00)	13 (72.22)	5 (27.78)
Midwife	123 (37.27)	207 (62.73)	43 (34.96)	80 (65.04)	59 (73.75)	21 (26.25)
Paramedic	4 (30.77)	9 (69.23)	0	4 (100)	3 (75.00)	1 (15)
	X2 = 32.7278	p-value 0.000	X2 = 4.69	p-value 0.196	X2 = 0.4902	p-value 0.921

According to Essentials service in community health centers, there is a service for children’s nutrition (Ministry of Health Indonesia, 2014a). For general preventive, promotive, curative, and rehabilitative, there is no strict requirement for responsibilities (World Health Organization, 2020). For instance, not all community health centers have nutritionists to provide all services about nutrition. That why it is requires teamwork for all professional’s health workers in

community health workers for nutrition service (Ministry of Health Indonesia, 2018). Moreover, there is a need management of nutrition services especially for areas with high nutrition problems (Labatjo et al., 2022a; Rosita et al., 2019). Training and application for nutritional care are mandatory for nutritionists but can be able to other health professionals (Hayati, 2023).

Previous studies have been done to encourage the importance of training in nutrition for all health

workers. It revealed that maternal nutrition counseling is associated with reduced stunting prevalence and improved feeding practices in early childhood: a post-program comparison study (Mistry et al., 2019). This study highlights the positive correlation between maternal nutrition counseling and reduced stunting prevalence among young children. It emphasizes the importance of involving female community health workers and effective program monitoring. A nutrition improvement program significantly improves children's health status (Liang et al., 2022). The study using mHealth revealed in-service nutrition training improves health workers' nutrition knowledge, nutrition counseling skills, and care of malnourished children (Shawky et al., 2022). Supporting the result of this study, not only nutritionists who need nutrition training, a study by Jones emphasizes the importance of incorporating registered nutritionists, registered dietitians, and nutrition-trained nurses and pharmacists in multidisciplinary teams during clinical and community training to enhance the nutrition knowledge of future medical doctors (Jones et al., 2023).

In order to improve health nutrition among mothers and children, nutrition educational intervention is required. The study in India found the effectiveness of a nutrition educational intervention delivered through health services, involving community workers who counseled caregivers regarding the feeding of children (Sharma et al., 2020). Similar to a previous study, the article in the US discusses strategies for health professionals to acquire nutrition counseling skills in medical training and clinical practices (Cepni et al., 2022). Additionally, the study in Ghana observed the nutritional counseling interactions between health workers and caregivers of children under two years, highlighting the role of health workers in providing appropriate nutrition guidance (Nsiah-Asamoah et al., 2019).

In the Indonesian context, there is much evidence showing the importance of nutrition education for improving health status. Numerous studies on nutrition revealed that nutrition problems can be effectively solved by educating people. The starting point will be worked by health workers in community health centers, such as a study about malnutrition that need medical doctor and nutritionist to be trained (Helmizar et al., 2020). Training for health workers and cadres needs to be standardized (Ernawati, 2019; Muthia et al., 2020; Nomleni et al., 2021; Puspita & Amar, 2018).

Conclusion

Training in nutrition among professional health workers in community health centers and sub-centers

still needs improvement. Medical doctors are the most health workers who ever attended the nutrition training. According to the time of attendance, just a few health workers have updated training in the last 12 months. In conclusion, nutrition training is essential, not only for nutritionists but also for all professional health workers in community health centers and sub-center.

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Author Contributions

All authors made equal and substantial contributions to this research endeavor. The concepts and design of the study were undertaken by P.A.S.M and N.K.S.D. P.A.S.M and I.G.A.K. were responsible for doing the literature search, as well as performing the subsequent analysis and interpretation. Authors P.A.S.M, N.P.L.Y, and K.Y.P made significant contributions to the critical revision of the manuscript. The final version of the manuscript for submission was reviewed and approved by all authors.

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Conflicts of Interest

All of the authors declared there is no conflict of interest in this study.

References

- Cepni, A. B., Crumbley, C., Nadeem, S., Ledoux, T. A., & Johnston, C. A. (2022). Incorporating Nutrition Counseling into Lifestyle Medicine. *American Journal of Lifestyle Medicine*, 16(3), 291–294. <https://doi.org/10.1177/15598276221077224>
- Crowley, J., Ball, L., & Hiddink, G. J. (2019). Nutrition in medical education: a systematic review. *The Lancet Planetary Health*, 3(9), e379–e389. [https://doi.org/10.1016/s2542-5196\(19\)30171-8](https://doi.org/10.1016/s2542-5196(19)30171-8)
- El-Kour, T. Y., Kelley, K., Bruening, M., Robson, S., Vogelzang, J., Yang, J., & Jimenez, E. Y. (2021). Dietetic workforce capacity assessment for public health nutrition and community nutrition. *Journal of the Academy of Nutrition and Dietetics*, 121(7), 1379–1391. <https://doi.org/10.1016/j.jand.2020.08.078>
- Ernawati, A. (2019). Analisis implementasi program penanggulangan gizi buruk pada anak balita di puskesmas Jakenan kabupaten Pati. *Jurnal Litbang: Media Informasi Penelitian, Pengembangan Dan IPTEK*, 15(1), 39–50. <https://doi.org/10.33658/jl.v15i1.131>
- Hayati, A. W. (2023). Training and Application of Nutritional Care Process for Nutritionist at the Puskesmas. *Dinamisia: Jurnal Pengabdian Kepada*

- Masyarakat*, 7(1), 287–294. <https://doi.org/10.31849/dinamisia.v7i1.12582>
- Helmizar, H., Susmiati, S., Nurdin, A., Rahmy, H. A., Sakinah, R., Wahyuni, R., Suryana, S., Astuti, M. T., & Astuti, M. (2020). Penanggulangan Gizi Buruk pada Dokter dan Petugas Gizi Puskesmas di Dinas Kesehatan Kabupaten Tanah Datar. *Jurnal Hilirisasi IPTEKS*, 3(2), 189–196. <https://doi.org/10.25077/jhi.v3i2.425>
- Hoare, J. K., Jebeile, H., Garnett, S. P., & Lister, N. B. (2021). Novel dietary interventions for adolescents with obesity: a narrative review. *Pediatric Obesity*, 16(9), e12798. <https://doi.org/10.1111/ijpo.12798>
- Indonesia. (2009). *Undang-Undang No 36 Tahun 2009 tentang Kesehatan*.
- Indonesia. (2014). *Undang-Undang Nomor 36 Tahun 2014 tentang Tenaga Kesehatan*.
- Jones, G., Macaninch, E., Mellor, D. D., Spiro, A., Martyn, K., Butler, T., Johnson, A., & Moore, J. B. (2023). Putting nutrition education on the table: development of a curriculum to meet future doctors' needs. *British Journal of Nutrition*, 129(6), 1000–1008. <https://doi.org/10.1136/bmjnph-2022-000510>
- Labatjo, R., Tumenggung, I., & Bami, M. (2022). Pelatihan Proses Asuhan Gizi Terstandar bagi Petugas Puskesmas. *JMM (Jurnal Masyarakat Mandiri)*, 6(1), 359–368. <https://doi.org/10.31764/jmm.v6i1.6375>
- Lepre, B., Mansfield, K. J., Ray, S., & Beck, E. J. (2021). Nutrition competencies for medicine: an integrative review and critical synthesis. *BMJ Open*, 11(3), e043066. <https://doi.org/10.1136/bmjopen-2020-043066>
- Liang, Y., Chen, X., Zhao, C., & Jiang, S. (2022). Nutrition improvement program for rural compulsory education students and individual health. *Frontiers in Public Health*, 10, 1051810. <https://doi.org/10.3389/fpubh.2022.1051810>
- McMonagle, G., Doherty, R., Keaver, L., & Ryan, L. (2023). Analysis of nutrition content within education programmes and nutrition requirements of accreditation standards and curricula for healthcare professionals in Ireland. *Proceedings of the Nutrition Society*, 82(OCE1), E41. <https://doi.org/10.1017/s0029665123000496>
- Mehta, M., Saha, S., Pandya, A., Wanjari, M. B., & Saxena, D. (2022). Accelerating Actions Against Malnutrition: A Call for Strengthening the Capacity of Health and Nutrition Program Staff in Devbhumi Dwarka, Gujarat. *Cureus*, 14(8). <https://doi.org/10.7759/cureus.28616>
- Ministry of Health Indonesia. (2013). *Peraturan Menteri Kesehatan Nomor 26 Tahun 2013 tentang Penyelenggaraan Pekerjaan dan Praktik Tenaga Gizi*. Retrieved from <https://peraturan.go.id/id/permenkes-no-26-tahun-2013>
- Ministry of Health Indonesia. (2014a). *Peraturan Menteri Kesehatan Nomor 75 Tahun 2014 tentang Pusat Kesehatan Masyarakat*. Retrieved from http://hukor.kemkes.go.id/uploads/produk_hukum/PMK%20No.%2075%20ttg%20Puskesmas.pdf
- Ministry of Health Indonesia. (2014b). *Peraturan Menteri Kesehatan Nomor 25 Tahun 2014 tentang Upaya Pelayanan Kesehatan Anak*. Retrieved from <https://peraturan.bpk.go.id/Home/Download/108349/Permenkes%20Nomor%2025%20Tahun%202014.pdf>
- Ministry of Health Indonesia. (2018). *Pedoman Proses Asuhan Gizi Puskesmas*. Retrieved from <https://gizikia.kemkes.go.id/assets/file/pedoman/pedoman-proses-asuhan-gizi.pdf>
- Ministry of Health Indonesia. (2019). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 14 Tahun 2019 Tentang Pelaksanaan Teknis Surveilans Gizi*. Retrieved from https://yankes.kemkes.go.id/unduhuan/fileunduhuan_1658478391_486124.pdf
- Mistry, S. K., Hossain, M. B., & Arora, A. (2019). Maternal nutrition counselling is associated with reduced stunting prevalence and improved feeding practices in early childhood: a post-program comparison study. *Nutrition Journal*, 18, 1–9. <https://doi.org/10.1186/s12937-019-0473-z>
- Muthia, G., Edison, E., & Yantri, E. (2020). Evaluasi Pelaksanaan Program Pencegahan Stunting Ditinjau dari Intervensi Gizi Spesifik Gerakan 1000 HPK Di Puskesmas Pegang Baru Kabupaten Pasaman. *Jurnal Kesehatan Andalas*, 8(4). <https://doi.org/10.25077/jka.v8i4.1125>
- Nomleni, D. S., Nahak, M. P. M., & Goa, M. Y. (2021). Studi Deskriptif: Pengetahuan Dan Peran Kader Dalam Penilaian Status Gizi Balita Di Puskesmas Alak. *CHMK Applied Scientific Journal*, 4(1), 29–40. Retrieved from <http://cyberchmk.net/ojs/index.php/sains/article/view/963>
- Nsiah-Asamoah, C., Pereko, K. K. A., & Intiful, F. D. (2019). Nutritional counselling interactions between health workers and caregivers of children under two years: observations at selected child welfare clinics in Ghana. *BMC Health Services Research*, 19(1), 1–15. <https://doi.org/10.1186/s12913-019-4692-y>
- Nugraha, S. M., Manik, C. G., & Su'udi, A. (2020). Analisis Kebijakan Tenaga Kesehatan Non-PNS di Puskesmas. *Jurnal Penelitian Dan Pengembangan*

- Pelayanan Kesehatan*, 51–63.
<https://doi.org/10.22435/jpppk.v4i1.3273>
- Puspita, I. D., & Amar, M. I. (2018). Refreshing kader posyandu dengan pelatihan pengukuran antropometri dan penilaian status gizi di wilayah UPT Puskesmas Sukmajaya. *Seminar Nasional Hasil Pengabdian Kepada Masyarakat*, 1(1). Retrieved from <https://conference.upnvj.ac.id/index.php/pkm/article/view/8>
- Rahman, H., & Puspitasari, A. (2020). Membandingkan Ketimpangan Ketersediaan Tenaga Kesehatan Puskesmas Di Wilayah Indonesia Timur. *Window of Public Health Journal*, 31–37. <https://doi.org/10.33096/woph.v1i1.8>
- Rosita, R., Nurlinawati, I., & Lamid, A. (2019). Manajemen Pelayanan Gizi Di Wilayah Dengan Status Gizi Tinggi Dan Rendah Dan Hubungannya Dengan Kualitas Tenaga Pelaksana Gizi. *Penelitian Gizi Dan Makanan (The Journal of Nutrition and Food Research)*, 42(1), 29–40. <https://doi.org/10.22435/pgm.v42i1.2419>
- Sharma, N., Gupta, M., Aggarwal, A. K., & Gorle, M. (2020). Effectiveness of a culturally appropriate nutrition educational intervention delivered through health services to improve growth and complementary feeding of infants: A quasi-experimental study from Chandigarh, India. *PloS One*, 15(3), e0229755. <https://doi.org/10.1371/journal.pone.0229755>
- Shawky, M., Salem, M. R., Abouhashima, F., Abdelaziz, S., & Aguizy, F. H. E. (2022). Use of a mHealth Approach for the Training of Health-care Providers on Nutrition Counseling in a Malnutrition Clinic. *Open Access Macedonian Journal of Medical Sciences*, 10(E), 1350–1358. <https://doi.org/10.3889/oamjms.2022.9728>
- Strauss, J., Witoelar, F., & Sikoki, B. (2016). *The fifth wave of the Indonesia family life survey: overview and field report* (Vol. 1). Rand Santa Monica, CA, USA. Retrieved from https://www.rand.org/content/dam/rand/pubs/working_papers/WR1100/WR1143z1/RAND_WR1143z1.pdf
- Surveymeter. (2015). *Indonesia Family Life Survey 5 and IFLS East*. Retrieved from <https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/download.html>
- Tramontt, C. R., Maia, T. de M., Baraldi, L. G., & Jaime, P. C. (2021). Dietary guidelines training may improve health promotion practice: Results of a controlled trial in Brazil. *Nutrition and Health*, 27(3), 347–356. <https://doi.org/10.1177/0260106021996924>
- Van Horn, L., Lenders, C. M., Pratt, C. A., Beech, B., Carney, P. A., Dietz, W., DiMaria-Ghalili, R., Harlan, T., Hash, R., & Kohlmeier, M. (2019). Advancing nutrition education, training, and research for medical students, residents, fellows, attending physicians, and other clinicians: building competencies and interdisciplinary coordination. *Advances in Nutrition*, 10(6), 1181–1200. <https://doi.org/10.1093/advances/nmz083>
- World Health Organization. (2020). *Health policy and system support to optimize community health worker programmes for HIV, TB and malaria services: an evidence guide*. Retrieved from <https://iris.who.int/bitstream/handle/10665/340078/9789240018082-eng.pdf?sequence=1>