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Qualitative Study of the Role and Practice of Pharmaceutical Services Focusing on Stunting by Community Pharmacists in Indonesia

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ABSTRACT

Introduction: The peak of Indonesia's demographic bonus period is estimated to be in 2035, requiring government efforts in an integrated stunting prevention program to minimize risks. Cross-sector and cross-profession collaboration in the health field is needed to support optimal stunting services through the role and practice of pharmacists in community pharmacy facilities. This study aims to explore two topics: the role of community pharmacists and the practice of pharmaceutical service in stunting prevention programs in Indonesia.
Methods: A pragmatic qualitative-descriptive study, using structured interview techniques with a Standardized Open-Ended Interview (SOEI). Nine community pharmacists were recruited using purposive sampling through interview consent. The data obtained from the interviews consisted of video and audio recordings that were transcribed, and then thematically analyzed.
Results: The findings of this study are mapped into two main domains. The roles are identified as 1) The role of pharmacists in stunting prevention education through educational services, 2) in cross-sector collaboration among healthcare workers to prevent stunting in the community, and 3) in pharmaceutical services specifically for stunting prevention, which reflects practices in community pharmacy facilities in providing 4) basic education and counseling services related to stunting, 5) pharmaceutical product services for stunting needs, 6) promotive and preventive services in the stunting program, and 7) curative and referral services in the stunting program.
Conclusion: These findings indicate a high level of awareness and professional competence among community pharmacists, and practices in the field show involvement and collaboration that can be integrated into Indonesia's health policy system in the future.

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INTRODUCTION

Indonesia is currently in the demographic dividend phase, a condition where the population structure is dominated by the working-age population (15–65 years old) who play an important role in development, with the proportion of the working-age population in 2023 estimated to reach 69.13% of the total population (1), The projection of the demographic bonus phenomenon will peak between 2020 and 2035 (2). The Government needs to take advantage of this momentum as a golden opportunity for Indonesia (3) Therefore, the impact of the demographic bonus depends on the Indonesian Government's strategic efforts, one of which is improving the quality of healthcare services, as outlined in the "Golden Indonesia Vision 2045" program (4). The direction of the Indonesian Government's policy in 2024 is committed to addressing stunting through a multidimensional, cross-sectoral approach, including the health, food, social protection, infrastructure, and education sectors (5,6), This goal is to prevent Indonesia from failing to take advantage of this momentum, which could lead to various social problems such as high unemployment rates and economic issues. The national health efforts in facing the demographic bonus involve special attention to the issue of stunting, which is a state of malnutrition, a condition in which a child experiences growth disorders characterized by a height that is lower than the standard for their age (7), the causes of stunting include socio-demographic factors, behavioral factors, and individual and environmental determinants (8,9). The important role and collaboration of healthcare workers are needed (10), so that the Government can provide appropriate interventions to each target group, such as education and promotion related to stunting for mothers and adolescent girls.

Since 2018, the Indonesian Government has established that addressing stunting requires intersectoral coordination among stakeholders from village and city governments, institutions/agencies, the business sector, the community, and other relevant entities in developing a national strategy (11). Next, Presidential Regulation Number 27 of 2021 on the acceleration of stunting reduction was issued, outlining strategic plans for specific and sensitive interventions, target groups, coordination, and a collaborative framework to accelerate stunting mitigation (12). The strategic role of community pharmacists as professional healthcare workers from a global perspective has changed significantly, particularly concerning service accessibility, quality assurance and the provision of pharmaceutical care, and the optimal utilization of resources (13), Positive perceptions of a pharmacist's image based on competence, ethics, communication skills, and emotional intelligence increase public trust in pharmacists (14). FIP (International Pharmaceutical Federation) globally states that community pharmacists have a strategic position in nutrition and weight management (15), so that it is expected to optimize the contribution to healthcare services for patients by providing recommendations related to health behavior and nutrition to the community with various medical conditions as outlined in the guidelines (16). Although there is a strong regulatory framework through the stunting program provided by the Government and the national stunting prevention strategy, the contribution of community pharmacists in their specific roles and practices has not been structurally established. While international evidence supporting the role of pharmacists in public health nutrition is available, no local qualitative data in Indonesia has been found. This study fills this gap by mapping the roles and practices of community pharmacists in pharmaceutical services focused on stunting in Indonesia.

METHOD

Research Type

Qualitative research on community pharmacists practicing in Indonesia was conducted using a pragmatic descriptive approach, to provide a practical and simple interpretation of the participants' experiences with a focus on generating insights that can be applied to pharmacy services. This study employed structured interviews using the Standardized Open-Ended Interview (SOEI) technique, which is necessary to ensure the richness of data and openness of participants' responses while maintaining a consistent sequence of questions for all participants. Although interview questions are asked sequentially to maintain thematic consistency among participants, adaptive probing techniques allow for rich and unexpected insights to emerge. This technique was chosen to ensure that participants' freedom is not constrained by the structure of the instrument. The qualitative data produced consisted of text for thematic analysis, thus ensuring high consistency and reliability throughout the interview process (17). The Hybrid Thematic Framework is adopted through the integration of the sensitization concept to determine emerging themes, thereby being able to bridge inductive exploration with systematic deductive analysis, in line with the pragmatic goal of balancing theoretical depth with specific research needs (18). Furthermore, it is developed based on the purpose

of the study, namely the role of community pharmacists and their practice in the implementation of pharmacy services focused on stunting. The use of this structure is to ensure that the domain can be adequately addressed within the time constraints of the research.

Population and Participants

This study involves community pharmacists currently working in community pharmacy facilities such as pharmacies, clinics, and health centers in Indonesia. Prospective participants were contacted personally via phone, email, or social media to provide a brief introduction about the study. Those who expressed interest and agreed to participate were then contacted again to receive detailed information and interview guidelines, after which the timing, location, and method of the interview were mutually agreed upon. Participants were selected using purposive sampling based on several criteria, namely: (1) community pharmacists actively working in community pharmacy facilities in Indonesia, (2) having at least five years of experience in the field of service, (3) possessing an active SIPA (Pharmacist practice license) number, and (4) willing to participate in this study.

Research Location

This study began by grouping the research area based on the distribution of community pharmacists and the prevalence of stunting across 38 provinces in Indonesia. The area was divided into several clusters calculated using the clustering technique, including 1) a high number of pharmacists – high prevalence of stunting, 2) a low number of pharmacists – high prevalence of stunting, 3) a low number of pharmacists – low prevalence of stunting, and 4) a high number of pharmacists – low prevalence of stunting, as presented in Table 1. In four provinces (mountainous Papua, Southwest Papua, South Papua, and Central Papua), no values were found in the available primary data sources. The division of the research area aims to ensure that the data collected is representative and provides a comprehensive understanding of differences in healthcare services across all clusters.

Table 1. Clustering research areas

Areas 1	Areas 2	Areas 3	Areas 4
East Kalimantan	West Kalimantan	Jambi	West Java
West Sumatera	East Nusa Tenggara	Riau Islands	East Java
South Sumatra	Nangroe Aceh	North Sulawesi	Central Java
South Kalimantan	Darussalam	Bengkulu	DKI Jakarta
Southeast Sulawesi	Central Sulawesi	Bangka Belitung	DI Yogyakarta
West Nusa Tenggara	Papua	Islands	Banten
	Central Kalimantan	North Kalimantan	North Sumatera
	West Papua		Riau
	Maluku		Bali
	Gorontalo		Lampung
	North Maluku		South Sulawesi
	West Sulawesi		

Instrumentation or Tools

The interview guide was designed by a team of researchers and verified by a team of experts consisting of academics and practitioners in the field of pharmaceutical services. The questions are formulated in easily understandable language and scientific terms to obtain consistent, focused answers. It has been registered for copyright with the Ministry of Law and Human Rights (KEMENKUMHAM) of the Republic of Indonesia under copyright number HAKI: EC002023106614. The interview guide is structured into two parts, as follows:

Part I: This section aims to gather participant characteristics and describe the data obtained to connect the interview results with other data.

Part II: This section aims to present questions to the participants according to the predetermined topics, as follows: 1) Role of community pharmacists: questions in this topic aim to identify the role of community pharmacists in pharmaceutical services, with a focus on stunting. 2) Practice of community pharmacists: questions in this topic aim to identify these models, focusing on their implementation in community pharmaceutical service facilities.

Data Collection Procedures

All participants agreed to participate in the initial invitation. Interviews were conducted and recorded using recording devices for manual transcription by the research team using several meeting methods, including face-to-face, Zoom, and WhatsApp Video Call over a six-month period (from December 2023 to May 2024), with an estimated duration of 20-25 minutes. The interview process began with an introduction and reading of the provisions in the interview guide, as well as the confidentiality and storage of data, followed by participants' consent to be recorded, and no interviews were repeated for any participant in this study. Interview questions were posed sequentially according to the research topics, accompanied by notes from the research assistants during the interview, which were cross-checked and included in the files during transcription. The dual role of researchers as both practicing pharmacists and academics requires consistency in applying reflexivity to manage intrinsic subjectivity in the research process (19). The professional closeness of the researcher as an insider facilitates rapport building and understanding of the technical context with participants. However, to mitigate the risk of bias due to familiarity, the researcher implements strategies such as critical distance, data source triangulation, and member checking (20). Additionally, an external audit trail is included to ensure the objectivity, validity, and credibility of the analysis results.

Data Analysis

This stage takes approximately two to three hours and is conducted after the interview to ensure that all topics have been covered. Each recording of the interview participants is transcribed word for word into a document. Data selection is carried out manually by four researchers using Microsoft Excel for in-depth and reflective analysis while maintaining an objective stance. Data analysis is conducted through six stages of Braun & Clarke's thematic analysis (21) : Stage 1) familiarization with the data, Stage 2) initial coding using a codebook, Stage 3) development and review of themes through thematic mapping. To reduce subjective bias and strengthen inter-researcher reliability, two researchers (FAP and SM) independently carry out Stage 4) coding, with any disagreements resolved through Stage 5) collaborative discussion (FAP, KA, PW, SS, and SM) until Stage 6) consensus is reached.

Table 2. Data saturation grid

Theme Code	PR1	PR2	PR3	PR4	PR5	PR6	PR7	PR8	PR9
I. Role of community pharmacists									
The role of pharmacists in stunting prevention education through educational services and health counseling	√	√	√	√	√	√	√	-	√
The role of pharmacists in cross-sector collaboration among healthcare workers to prevent stunting in the community	√	√	-	-	-	-	√	√	√
The role of pharmacists in pharmaceutical services specifically for stunting prevention	√	-	√	-	√	-	√	√	-

II. Pharmacy service practice focusing on stunting									
Basic education and counseling services related to stunting	√	-	√	√	-	-	-	-	-
Pharmaceutical product services for stunting needs	√	-	-	-	-	√	-	√	√
Promotive and preventive services in the stunting program	-	√	-	-	√	-	√	-	√
Curative and referral services in the stunting program	-	√	-	-	-	√	-	-	-

√ = Themes emerge in participants' responses

All stages of documentation, including the processes of reflective notes and analysis logs, were maintained as an audit trail by 2 researchers (FAP and APP) to ensure that the findings authentically reflected the pharmacists' perspectives without interference from the researchers' academic positions. This process took place from June to September 2024. Data saturation was monitored throughout the data collection process using a saturation grid matrix (Table 2), to ensure the completeness of findings. From the interviews with participants one through nine, themes that emerged were tracked and compared across respondents, until the eighth and ninth interviews, no new themes or significant unique insights were found, which then indicated that the data had reached a point of redundancy. Subsequently, participant recruitment was stopped at nine people, because the saturation grid confirmed that the main research domains had been well covered and validated regarding the role and practices of community pharmacists in pharmacy services focused on stunting.

Ethical Approval

This study was approved by the Medical and Health Research Ethics Committee (MHREC), Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada – Dr. Sardjito General Hospital (Ref. Number: KE/FK/1823/EC/2023). Potential informants provided informed consent for assent, and critical points regarding participant safety and personal data protection were explained. The informant receives an honorary following the reasonable market value of his involvement.

RESULTS

A total of 9 community pharmacists practicing in community pharmacy facilities in Indonesia were designated as participants, and their characteristics are shown in Table 2. The majority of participants were female (66.67%), with a bachelor's degree in a pharmacist professional program (55.56%), and some had advanced to a master's degree in pharmacy (44.44%). The participants' ages ranged from 28 to 45 years, and their work experience ranged from 5 to 18 years. Participants were responsible as pharmacists (55.56%), while some were facility owners (44.44%). Participant demographic data were recorded to establish a basis for their clinical competence and legal authority, by validating credentials this study ensures that the documented statements reflect the real experiences of practitioners who are qualified and legally authorized to carry out pharmaceutical interventions in the community.

Table 3. The characteristics of participants

ID	Gender	Age	Position	Level of Education	Year of Experience	Practice Area	Practice Facilities
PR1	Female	30	Pharmacist in charge and facility owner	Master (S2)	5	Central Sulawesi	Clinic
PR2	Female	32	Pharmacist in charge	Master (S2)	5	Bali	Public Health Center
PR3	Female	43	Pharmacist in charge and facility owner	Master (S2)	17	West Java	Clinic
PR4	Male	28	Pharmacist in charge and facility owner	Bachelor (S1)	5	Riau Islands	Pharmacy
PR5	Female	35	Pharmacist in charge	Bachelor (S1)	6	Gorontalo	Public Health Center
PR6	Female	32	Pharmacist in charge	Bachelor (S1)	10	West Papua	Clinic
PR7	Male	36	Pharmacist in charge and facility owner	Bachelor (S1)	9	Jambi	Pharmacy
PR8	Male	34	Pharmacist in charge	Master (S2)	7	South Kalimantan	Pharmacy
PR9	Female	45	Pharmacist in charge	Bachelor (S1)	18	South Sulawesi	Public Health Center

Topic I. The role of community pharmacists in pharmaceutical services focus-stunting

This topic produces three main themes, the topic aims to explore the role of community pharmacists in pharmaceutical services focus-stunting within the government's stunting program in Indonesia.

Theme I.1 The role of pharmacists in stunting prevention education through educational services and health counseling

In this theme, community pharmacists practicing at public health centers in area 1 (a high number of pharmacists – high prevalence of stunting) revealed that pharmacists play a role as informants in handling stunting based on government programs. The role of pharmacists as educators, screeners, and counselors related to anemia (22), provides an overview of the implementation of their practice in the future.

> *"We explained that currently stunting is being highlighted by the government, so younger siblings later are expected not to experience anemia... at the adolescent health post, we explain why stunting occurs, which is due to iron deficiency, and likewise in the pregnant women's class, we explain the importance of iron tablets." (PR9-Public Health Center)*

Meanwhile, a complex role was found in community pharmacists practicing in pharmacies in area 3 (a low number of pharmacists – low prevalence of stunting) who stated that community pharmacists have professional responsibilities, specific clinical intervention capabilities, preventive services, up to proper and good service flow. Supporting research results in Ethiopia that claim that the majority of community pharmacy professionals are knowledgeable about medical nutrition therapy and enthusiastic about nutrition assessment and medical nutrition therapy, pharmacists accept it as part of their job and practice limited dietary counseling on pregnancy and chronic diseases (23).

> *"As pharmacists, we have a responsibility when we engage in self-medication or counseling with patients… through pharmacy services in general and specifically regarding stunting, we provide services to pregnant women… then we ask about their nutritional condition… the importance of taking vitamins is emphasized… then counseling is given regarding dietary patterns to pay attention to so that the risk of stunting does not occur." (PR4-Pharmacy)*

Pharmacists in the clinic also revealed that the role of pharmacists is very important in making treatment decisions to provide recommendations to patients. A study shows that community pharmacists are often asked for information by female patients during pregnancy, and play a role in structured counseling for preconception and pregnancy health (24).

> *"Or if they have complaints or ask about which multivitamins are good to take and also what is good for the mother and fetus… as pharmaceutical health workers, our role as informants and communicators… we also help make decisions on recommendations for pregnant women… usually, we suggest two or three options to pregnant women." (PR3-Clinic)*

Theme I.2 The role of pharmacists in cross-sector collaboration among healthcare workers to prevent stunting in the community.

In this theme, community pharmacists practicing at public health centers in area 1 (a high number of pharmacists – high prevalence of stunting) and area 2 (a low number of pharmacists – high prevalence of stunting) revealed the same thing that the role of pharmacists in curative services has shifted to preventive services at the upstream of care, so pharmacists need to collaborate with other health workers in the implementation of pharmaceutical services focused on stunting. This study highlights that a systems approach with collaborative governance functions to address the ongoing malnutrition epidemic (25).

> *"Besides being for curative purposes, we also play a role in health preventive efforts... actually, there we can contribute or take part in handling stunting or preventing stunting... coordinating with nutrition officers or public health center cadres to record nutritional status and stunting indications." (PR2-Public Health Center)*

> *"In our area, we have iron (Fe) tablets. The distribution of medication is entirely handled by the pharmacy, and we contribute to addressing stunting through the distribution of iron tablets, starting from teenagers to pregnant and postpartum mothers... we have youth health posts, so the pharmacy is involved in that as well." (PR9-Public Health Center)*

In line with what was expressed by community pharmacists at clinics in area 4 (a high number of pharmacists – low prevalence of stunting), that the role of pharmacists in educating about stunting starts from adolescents, during the mother's pregnancy, up to the child being born. Addressing stunting by highlighting the multifactorial causes of stunting, starting from maternal health to the culture and living environment, needs to be carried out as an effective strategy (26).

> *"Prevent children from frequently falling ill, which can be prevented by providing vitamins or nutritious food... encourage or urge pregnant and breastfeeding mothers to frequently check ANC... for children or babies, immunization and growth and development checks are also conducted at the doctor or public health center " (PR1-Clinic)*

Theme I.3 The role of pharmacists in pharmaceutical services specifically for stunting prevention

This theme emphasizes the specific role of pharmacists in pharmacy services focused on stunting. For pharmacists practicing in pharmacies in area 1 (a high number of pharmacists – high prevalence of stunting), it was found that the unique role of pharmacists through homecare services as health agents can be applied in stunting services while educating about the impact of early marriage in certain areas. A study related to the role of pharmacists shows that an effective strategy to strengthen stunting prevention efforts through the rational use of nutritional supplements is through the leadership of pharmacists in pharmaceutical services (27).

> *"There is pharmacy homecare for the community... it is very possible for us as community pharmacists to implement pharmacy homecare while also carrying out our role as promoters or agents of stunting prevention in the community... pharmacists as promoters in the community— is it possible to approach households... the main problem, as mentioned, is awareness about not marrying early, which needs to be educated." (PR8-Pharmacy)*

The same as what was conveyed by community pharmacists practicing in clinics in area 3 (a low number of pharmacists – low prevalence of stunting) that self-medication services include stunting services that can be provided

by community pharmacists. A study shows that most self-medication practices by parents are aimed at children under five years, so education by professionals is very necessary (28).

"Community pharmacists play a very active role regarding pregnancy starting from the mother, such as when she comes to the pharmacy for self-medication." (PR3-Clinic)

Topic II. Practice of pharmaceutical service focus-stunting

This topic yielded four main themes, this topic is discussed to explore the stunting-focused pharmaceutical service model implemented by community pharmacists in their respective community pharmacy facilities.

Theme II.1 Basic education and counseling services related to stunting

Pharmaceutical services focusing on stunting that appear in this theme are identified in pharmacists practicing in clinics who revealed that access to digital counseling services in the future is a service that needs to be developed to support pharmaceutical services focusing on stunting. A study revealed the readiness of pharmacists to use telepharmacy in services and their perception that the telepharmacy practice model should be included in training programs that train future pharmacists (29)

As a link between doctors and patients so that prescriptions are delivered properly... supporting therapy success, preventing stunting... supporting vitamin intake during pregnancy or preventing stunting in children... acting as a promotive agent... providing education through online platforms such as Instagram and Facebook... or through direct Q&A with patients regarding prevention and ways to address stunting" (PR1-Clinic)

"Interactive sessions... patients ask about prenatal multivitamins, multivitamins for babies, and formula milk... Sometimes via phone... providing the pharmacist's business card... phone numbers are on the receipt... quite a few communicate directly to ask about multivitamins and even medicines" (PR3-Clinic)

Meanwhile, pharmacists who practice in independent pharmacies revealed that traditional practices, namely providing counseling in pharmacies, are still a choice for people today. In general, people choose to consult with doctors for medical care and visit community pharmacies and utilize the services provided by community pharmacists (30).

"When patients come… their blood sugar is high… at the same time we provide counseling on foods that should be avoided and recommended" (PR4-Pharmacy)

"Many pregnant women ask for supplements or iron… do not consult a doctor, only go to the pharmacy… our reference is general… information on taking an iron tablet once a day." (PR8-Pharmacy)

Theme II.2 Pharmaceutical product services for stunting needs

In this theme, pharmaceutical services focusing on stunting are identified in clinical pharmacists who state that pharmacists are tasked with ensuring the availability of supporting products in pharmaceutical services focusing on stunting. A research finding that supports reveals that pharmacists report nutritional supplements have a positive impact on public health center and they believe these supplements should be available in pharmacies under the supervision of pharmacists (15).

"Ensuring the availability of supplementary medicines or vitamins and supporting formula milk" (PR1-Clinic)

"Our services cooperate with BPJS… adding vitamins for pregnant mothers or supplements for children and babies" (PR6-Clinic)

Pharmacists at pharmacies and community health centers also revealed that providing recommendations and distributing free supplements are the responsibilities of pharmacists at their respective facilities. The results of a study showed that pharmacists demonstrate a positive attitude towards the use of dietary supplements and are aware of their responsibility in providing counseling to patients about safe consumption (31).

"At the pharmacy, it is only for providing information about choosing milk, selecting supplements and vitamins…… the basic information we provide is that when stunting occurs, these are the vitamins and milk that can be recommended." (PR7-Pharmacy)

"For pregnant mothers, we include them in the pregnancy class or monthly visits for pregnant mothers… given Fe tablets at each monthly visit…… for children patients, we don't have that program, unless the child has complaints and then comes to the health center… there we can give supplements, at my place it's only curcuma" (PR9-Public Health Center)

Theme II.3 Promotive and preventive services in the stunting program

In this theme, pharmacists practicing at public health centers identify services related to promotive and preventive efforts that can be carried out by pharmacists in providing pharmaceutical services focused on stunting through government programs. An approach through health campaigns involving the private sector and relevant government organizations can enhance the role of pharmacists as important contributors to the public health system, by promoting well-being, disease prevention, and improved patient outcomes (32).

"Collaboration with hospitals that participate in promotive activities during adolescent public health center… pharmacists provide counseling… involved in determining participants based on body weight… body mass index…. public health efforts… preventive programs… public health center for toddlers, adolescents, non-communicable disease prevention, TB" (PR2-Public Health Center)

"Counseling programs for pregnant women, breastfeeding mothers, pre-adolescents… distribution of iron tablets… nutrition improvement programs… programs for pregnant women with chronic energy deficiency… for counseling, we are usually involved in counseling for pregnant women, breastfeeding mothers, pre-adolescents" (PR5-Public Health Center)

"For adolescents, we include them in adolescent public health center …" (PR9-Public Health Center)

Theme II.4 Curative and referral services in the stunting program

This theme emphasizes curative services up to the referral that can be provided by pharmacists to patients. Pharmacists in the clinic emphasize that most patients who come to the clinic are only given basic treatment by the doctor and pharmaceutical services for handling stunting before being referred to the community health center or hospital. Pharmacists collaborating with other healthcare professionals need to work synergistically and collaboratively by adjusting interventions and patient needs, so that they can improve and optimize pharmacy services, and have a positive impact on future health outcomes (33).

"Most of those who visit us are not really focused on stunting, they usually go directly to the community health center or hospital….. if children come, the doctor is more focused on nutrition checks or deworming" (PR6-Clinic)

Meanwhile, pharmacists at public health centers continue to provide pharmaceutical services according to the results of examinations, particularly for the target group of stunting. In the environment of Indonesian government-owned community pharmacy facilities, recognizing the development of pharmacists as agents of change to improve the rational use of medicines in the community and capable of achieving a position in the future to provide new services in primary care related to pharmacy to the general public (34).

"Child public health center … from the curative side… prescription services, prescription assessment… cases of diarrhea or pregnant women receiving iron supplements… their role in the process of prescription assessment and drug delivery as well as patient education…… health services at the community health center for patients who need medication or consultation" (PR2-Pblic Health Center)

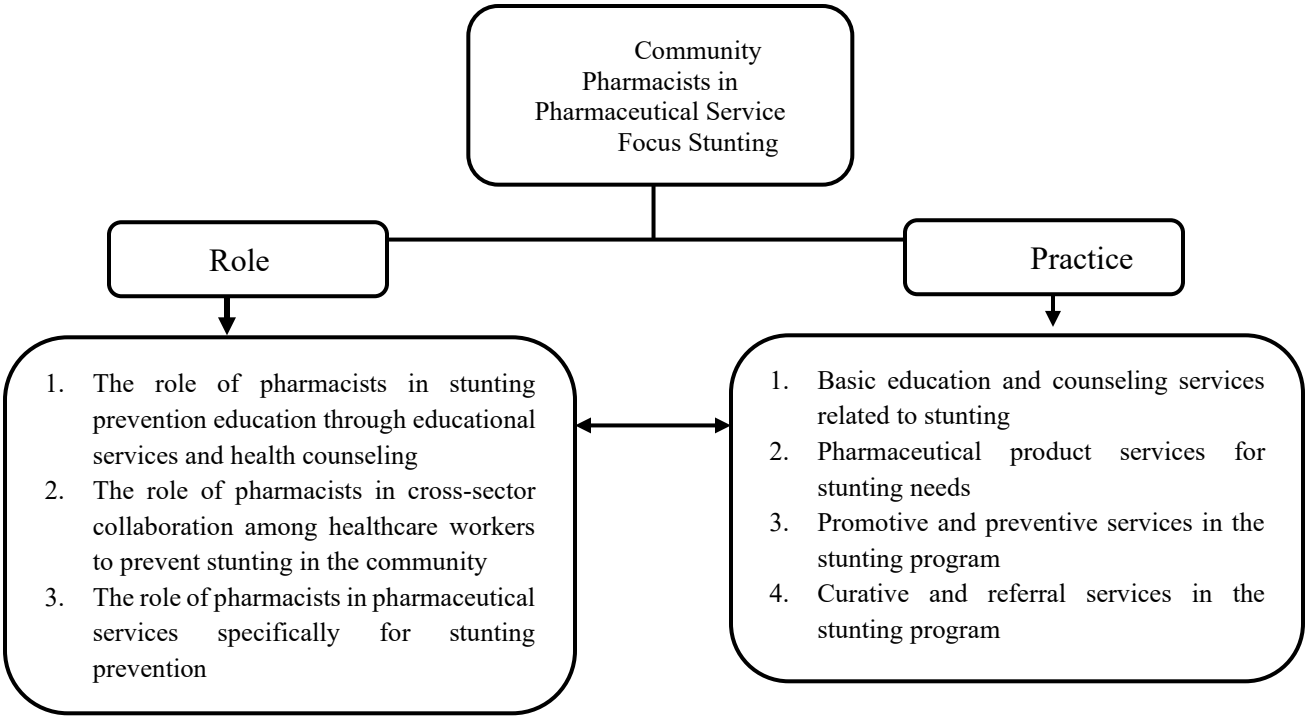

Figure I. Conceptual Diagram

The conceptual diagram (Figure I) shows that community pharmacists have a role and practice structure specifically integrated into pharmaceutical services focused on stunting. The role of pharmacists is not only limited to technical pharmaceutical functions in the field but extends to being education and counseling agents as well as cross-sector health collaborators. In the diagram, it is clearly seen that the role of pharmacists as stunting prevention educators directly collaborates with providing counseling services to the community. The frequency of interactions between pharmacists and patients in pharmacies as the front line emphasizes that pharmacists need to have knowledge in the field of nutrition, so that they can strengthen their role in nutrition management and their contribution to public health (35). Furthermore, the foundation of health service implementation is evident in the involvement of pharmacists in cross-sector collaboration among health workers. This relationship emphasizes that optimizing stunting interventions in the community depends on the extent to which community pharmacists, as the frontline, can transform their clinical knowledge into tangible collaborative action in the field.

In greater depth, the link between the aspects of roles and practices emphasizes the specialization of pharmaceutical services that focus on recommendations and the availability of pharmaceutical products. The synergy of pharmaceutical services specific to stunting prevention and support for an effective referral system shows that the practice of pharmacists in pharmacies, public health centers, or clinics is not an isolated activity, but can be formed into a unified system through public health monitoring. A study shows that community pharmacists in Saudi Arabia have adequate knowledge and a positive attitude regarding vitamins and nutritional supplements but still need training to improve their communication skills in order to optimally play a role in counseling and enhance the quality of their practice (36). Thus, through strengthening the role of pharmacists with technically organized guidelines in Indonesia, it is hoped that the quality of practice services in the field will improve, which ultimately contributes significantly to reducing the prevalence of stunting in Indonesia.

DISCUSSION

Our research findings regarding the role of community pharmacists in pharmaceutical services focused on stunting show the significance of a paradigm shift in pharmacy services within Indonesia's stunting program, with the pharmacist's responsibility moving from traditional drug dispensing to a more proactive, preventive, and

educational role (Theme I.1). Community pharmacist services have demonstrated professional knowledge, attitudes, and good practices (37). Identification in areas with high stunting prevalence (Area 1) revealed that pharmacists practicing in community health centers play a key role in information, bridging the gap between public health levels in the field and government policy (PR9). This professional role is further strengthened in community pharmacy facilities of independent pharmacies (Area 3) which assess that the practitioners have high professional responsibility through clinical interventions and counseling (PR4). In line with research related to nutrition management at the community level, the important role of pharmacists begins at the education stage up to consultation, followed by the assessment and nutritional therapy recommendation stage, the monitoring and evaluation stage, and finally the interprofessional collaboration stage (16). In a clinical setting, the ability of pharmacists to provide tailored recommendations for prenatal multivitamins (PR3) reinforces the role of pharmacists as communicators in healthcare services who are trusted by the public and decision-makers in counseling for treatment recommendations. A study involving public health workers as stunting cadres also identified barriers in interventions and the need for comprehensive implementation in the field (38), other studies also found agreement that pharmacists have a role in providing nutrition recommendations to the community (15,39). One important meaningful aspect of this study is the need for cross-sector collaboration to address the causes of stunting (Theme I.2), the significance of a broader role for pharmacists, through collaboration with other health workers, in the care of patients experiencing malnutrition can be emphasized through supportive policies (15).

The agreement on handling stunting must follow a life cycle approach, starting by targeting the health of adolescents and pregnant women, regardless of the density of pharmacists or the prevalence rate of stunting (Area 1 and 2). There is a need for the integration of community pharmacists with nutrition officers and community cadres (PR2) to facilitate stronger nutritional status recording and early detection of stunting indicators in the field. Research by Kumaki et al. found that the positive impact of involving pharmacists and community nutritionists can provide a strong framework and enhance knowledge, thereby optimizing patient services (40). In addition, the government needs to establish centralized management of the iron (Fe) tablet distribution program by pharmacies, which is expanded to adolescent health posts at the school level (PR9), showing how pharmacists are involved from the beginning in controlling product availability through to distribution and counseling, which is crucial to raising public awareness in the prevention and management of stunting. In line with the legality of their role in Indonesia, namely the role of pharmacists regulated under Government Regulation Number 51 of 2019 concerning Pharmaceutical Work (Chapter 11), which states that pharmacists are not only responsible for drug production and development, but also play a role in drug management, prescription drug delivery, and providing drug information services (41). Overall, the findings of this topic reveal that the role and active involvement of community pharmacists and public trust in the future in nutrition management have been identified, which is in line with previous research (42–44).

In the second topic related to practices in community pharmacy facilities, four main themes were successfully identified. The emergence of specific pharmacy services, such as Pharmacy Homecare, illustrates a unique and underutilized strategy in stunting prevention (Theme I.3). Our data highlight the ability of pharmacists to go beyond clinical boundaries to become 'health promoters' who interact directly with households in areas with high prevalence (Area 1); this approach is highly valuable for addressing socially sensitive determinants of stunting, such as awareness of early marriage (PR8). Additionally, the role of pharmacists in managing self-medication for pregnant women in clinical facilities (Area 3) reinforces the position of pharmacies as the first point of contact for maternal care (PR3). Studies show that pharmacists play an important role in integrating patient care and wellness by helping with food selection, addressing nutritional deficiencies, and promoting balanced eating and lifestyle habits (45). This unique function as a "gatekeeper" allows pharmacists to perform early interventions and monitor the implementation of self-medication in accordance with clinical guidelines.

Our findings reveal a dual approach in providing education and counseling related to stunting (Theme II.1). Community pharmacists emphasize the importance of services evolving towards a digital platform to bridge communication access between healthcare providers and patients (PR1, PR3). This digital shift is crucial to optimize therapy success and provide real-time responses regarding education and counseling on vitamin intake and stunting prevention. This is referred to as telepharmacy and is fully supported as a top priority by the International Pharmaceutical Federation (FIP), where digital health is one of the 21 Development Goals launched by the International Pharmaceutical Federation in 2020 (46). Conversely, traditional face-to-face interactions still remain the main goal in private pharmacies. The high frequency of patients who come for self-medication with nutritional

supplements without prior consultation with a doctor (PR8) supports the role of community pharmacists as an "easily accessible first point of service." This indicates that although digital tools expand reach, the physical presence of pharmacies remains important for opportunistic screening, such as quickly identifying nutritional risks (PR4). Studies reveal that the community acknowledges the existence of pharmacists through face-to-face interactions, so their integration into digital services still requires awareness of meaningful direct involvement (47). An important aspect of practices focused on stunting is the management of specialized pharmaceutical products (Theme II.2).

In the clinical setting, the role of pharmacists focuses on ensuring the consistent availability of nutritional products, which are often integrated with the national health insurance scheme in Indonesia (PR1, PR6). Studies conducted in low- to middle-income countries show that barriers to stunting interventions through supplements or nutritional products include limited financial capacity and irregular supply chains (48). This institutional support differs from the *Puskesmas* model, where pharmacists are deeply involved in structured distribution programs designed by the government, such as the iron (Fe) tablet program every month during pregnancy classes (PR9). These findings emphasize that 'practice' in this context is not only clinical but also logistical; the pharmacist's ability to recommend the right nutritional products based on the child's specific stunting stage (PR7) is as important as the physical availability of the product itself. The study highlights that community pharmacists in *Puskesmas* are more formally integrated into the national promotive and preventive framework compared to their counterparts in other community pharmacy facilities (Theme II.3). By participating in adolescent and pregnant mother health posts, pharmacists contribute to layered preventive strategies (PR2, PR5). This involvement requires professional awareness through addressing stunting, which is a national priority, involving various sectors and professions, especially in the field of public health in Indonesia, and needs to be addressed in a convergent, integrated, and comprehensive manner (49). Finally, practices focusing on stunting involve a clear referral pathway, although it varies (Theme II.4). In clinics, community pharmacists often provide basic initial services before referring complex stunting cases to higher-level facilities such as health centers or hospitals (PR6). This is supported by studies indicating that in developing countries, pharmacists have great potential in managing diarrhea (50). This "triage" function is crucial in anticipating delays in specialized care. The curative role of community pharmacists within health centers remains strong, involving careful prescription assessment and providing patient education for conditions related to stunting, such as chronic diarrhea (PR2). The ability to handle these clinical cases while simultaneously providing nutrition education ensures a holistic approach to patient recovery and long-term growth monitoring.

While the international framework through FIP guidelines encourages a broader role for community pharmacists in the field of pharmaceutical and nutrition services, our findings reveal significant structural misalignments in the health context in Indonesia. Research by Wiggle et al emphasizes that understanding and exploring progress as well as improvement prospects should be applied in other countries in Central Asia and globally to ensure the sustainability of improvements and continued education related to stunting services (51). The absence of standard guidelines in pharmaceutical services focused on stunting often limits the role and collaboration of pharmacists to informal voluntary contributions. This systemic barrier indicates that without changes in the scope of regulation and increased inter-sectoral collaboration, the potential for pharmaceutical services focused on stunting by community pharmacists will be less than optimal. Aligning the image of community pharmacists with the advancement of their profession in Indonesia requires massive public education programs, improvement of service quality, and strengthening of health policy advocacy (52).

CONCLUSION

The findings of this study provide a thematic mapping with an exploratory approach on the role and practices of community pharmacists in pharmaceutical services focused on stunting in Indonesia, although standard guidelines have not been structurally established. These findings show a high level of awareness and professional capability among community pharmacists, and field practices indicate involvement and collaboration that can be integrated into Indonesia's health policy system in the future. The success of community pharmacist interventions in the future will require the formalization of protocols and synchronization within the referral system among health facilities to ensure continuity of services for groups vulnerable to stunting in Indonesia.

AUTHOR'S CONTRIBUTION STATEMENT

The conceptualization was carried out by all authors. Data curation was performed by FAP, APP and SM. Formal analysis and investigation was conducted by FAP, KA, PW, and SS. The methodology was developed by FAP, KA, PW, and SS. Project administration and the software was managed by FAP, SM, and APP. Supervision was provided by KA, PW and SS. Validation was done by FAP and APP. Writing, review, and editing were done by all authors.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that all content and academic responsibility in this manuscript is entirely the responsibility of the authors, the use of Artificial Intelligence (AI) technology to assist the writing process, language editing, and grammar checking does not affect the scientific substance, data interpretation, or conclusions of this research.

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BIBLIOGRAPHY

1. BKKBN. Laporan Kependudukan Indonesia 2024 [Internet]. Jakarta, Indonesia: Direktorat Analisis Dampak Kependudukan; 2024. 245 p.
2. BPS. Analisis Profil Penduduk Indonesia - Mendeskripsikan Peran Penduduk dalam Pembangunan [Internet]. Jakarta: Direktorat Analisis dan Pengembangan Statistik; 2022. 124 p.
3. Khairunnisah, Fitriyani AL. Bonus Demografi dan Visi Indonesia Emas 2045. BPS [Internet]. 2023;
4. Noor MS, Shaddiq S. Bonus Demografi Menyongsong Indonesia Emas 2045 - Ditinjau dari Perspektif Ekonomi, Teknologi, dan Kesehatan [Internet]. 1st ed. Yogyakarta: CV. Mine Yogyakarta; 2023.
5. Aida AN, Wibowo APS, Elizabeth A, N ARM, Dahiri D, Octavia E, et al. Kajian Isu Strategis Rencana Pembangunan Tahun 2024 [Internet]. Jakarta: Pusat Analisis Anggaran dan Akuntabilitas Keuangan Negara; 2023. 1–122 p.
6. Nofitasari A, Islaeli I, Dina H. Stunting Countermeasures Model (A Case Study of a Specific Nutrition Intervention Program). Journal of Public Health and Pharmacy. 2025;5(2):417–430. https://doi.org/10.56338/jphp.v5i2.6373
7. Wati K, Kartini A, Rahfiludin MZ. Determinant Factors: Literature Review Study on Stunting Incidence in Toddlers. International Journal of Health Education and Social. 2022;5(1):8–20. https://doi.org/10.1234/ijhes.v5i2.223
8. Oktavia E, Editia YV, Primadani M. Faktor-Faktor yang Mempengaruhi Kejadian Stunting pada Balita di Indonesia Tahun 2024. Jurnal Ventilator. 2024;2(1):158–168. https://doi.org/10.59680/ventilator.v2i1.988
9. Palapessy VED, Susanti R, Febrianti N, Hariyani F, Sucipto B. The Role of Health Workers in Preventing Stunting in Children. Jurnal Ners. 2023;7(1):260–265. https://doi.org/10.31004/jn.v7i1.13139

10. Panfilova H, Nemchenko A, Korzh I, Zaytzeva Y, Bogdan N, Tsurikova O, et al. Scientific Measurement of the Current Role of Pharmacist in the Paradigm of Pharmaceutical Care Development. Research Journal of Pharmacy and Technology. 2019;12(2):817–826. https://doi.org/10.5958/0974-360X.2019.00142.2
11. Ismail H, Athijah U, Hidayat W, Rahem A. Patient's Perception of the Image of Community Pharmacists. Pharmacy Education. 2023;23(4):66–70. https://doi.org/10.46542/pe.2023.234.6670
12. Suleiman MA, Abdulwase I, Tukur KA, Umar ZB, Muhammad SS, Ladan MM, et al. Evaluating the Competency of Community Pharmacists in Identifying and Managing Malnourished Patients: A Cross-Sectional Survey. Exploratory Research in Clinical and Social Pharmacy. 2023;12:100341. https://doi.org/10.1016/j.rcsop.2023.100341
13. Greer BD, Mitteer DR, Briggs AM, Fisher WW, Sodawasser AJ. Comparisons of Standardized and Interview-Informed Synthesized Reinforcement Contingencies Relative to Functional Analysis. Journal of Applied Behavior Analysis. 2020;53(1):82–101. https://doi.org/10.1002/jaba.601
14. Swain J. A Hybrid Approach to Thematic Analysis in Qualitative Research: Using a Practical Example. In: Sage Research Methods Cases. 2018. https://doi.org/10.4135/9781526435477
15. Finlay L. "Outing" the Researcher: The Provenance, Process, and Practice of Reflexivity. Qualitative Health Research. 2002;12(4):531–545. https://doi.org/10.1177/104973202129120052
16. Ahmed SK, Mohammed RA, Nashwan AJ, Ibrahim RH, Abdalla AQ, Ameen BM, et al. Using Thematic Analysis in Qualitative Research. Journal of Medicine, Surgery, and Public Health. 2025;6:100198. https://doi.org/10.1016/j.glmedi.2025.100198
17. Meilianti S, John C, Duggan C, O'Campo L, Bates I. How Can Pharmacists Contribute to Anaemia Management? A Review of Literature and Exploratory Study on Pharmacists' Role in Anaemia. Exploratory Research in Clinical and Social Pharmacy. 2023;9:100231. https://doi.org/10.1016/j.rcsop.2023.100231
18. Silverio SA, Rahman MR, Wilson CA, Catalao R, Lakhani S, Alter M, et al. "There's Very Little That You Can Do Other Than Refer Them to the Doctor if You Think They've Got Postnatal Depression": Scoping the Potential for Perinatal Mental Health Care by Community Pharmacists. Research in Social and Administrative Pharmacy. 2023;19(2):286–292. https://doi.org/10.1016/j.sapharm.2022.10.005
19. Frumence G, Jin Y, Kasangala A, Bakar S, Mahiti GR, Ochieng B. A Systems Approach in the Prevention of Undernutrition among Children Under Five in Tanzania. Nutrients. 2024;16(11):1551. https://doi.org/10.3390/nu16111551
20. Mulyani AT, Khairinisa MA, Khatib A, Chaerunisaa AY. Understanding Stunting: Impact, Causes, and Strategy to Accelerate Stunting Reduction—A Narrative Review. Nutrients. 2025;17(9):1493. https://doi.org/10.3390/nu17091493
21. Ahmed N, Ijaz S, Manzoor S, Sajjad S. Prevalence of Self-Medication in Children Under-Five Years by Their Mothers in Yogyakarta City, Indonesia. Journal of Family Medicine and Primary Care. 2021;10(8). https://doi.org/10.4103/jfmpc.jfmpc_2457_20
22. Wathoni N, Lestari K, Iftinan GN, Rahayu SA, Nurlatifah A, Khairinisa MA, et al. Knowledge, Perception, and Readiness of Indonesian Pharmacists for the Implementation of Telepharmacy-Based Pharmaceutical Services in Indonesia. Integrated Pharmacy Research and Practice. 2023;12:213–225. https://doi.org/10.2147/IPRP.S434790
23. Xuan YW, Goh HP, Rehman IU, Shafqat N, Mohammed Y, Worafi A. Assessing Consumers' Perception and Demand on Community Pharmacists' Dispensing Services. Journal of Pharmaceutical Policy and Practice. 2023;16(1):1–17. https://doi.org/10.1186/s40545-023-00609-1
24. Slavcheva K, Staynova R, Neycheva N, Kafalova D. Community Pharmacists' Knowledge, Attitudes, and Readiness to Provide Counseling on Food Supplements—A Scoping Review. Nutrients. 2025;17(23):3754. https://doi.org/10.3390/nu17233754
25. Kassem RG, Mbata AO, Usuemerai PA, Abass LA, Ogbewele EG. Pharmacy Marketing for Public Health Impact: Promoting Preventive Care and Health Literacy Through Strategic Campaigns. World Journal of Advanced Research and Reviews. 2023;18(2):1406–1418. https://doi.org/10.30574/wjarr.2023.18.2.0982
26. Bandiera C, Mistry SK, Harris E, Harris MF, Aslani P. Interprofessional Collaboration Between Pharmacists and Community Health Workers: A Scoping Review. International Journal for Equity in Health. 2025;24:23. https://doi.org/10.1186/s12939-025-02377-7

27. Hermansyah A, Kristina SA. Primary Health Care Policy and Vision for Community Pharmacy and Pharmacists in Indonesia. Pharmacy Practice. 2020;18(3):2085. https://doi.org/10.18549/PharmPract.2020.3.2085
28. Singla N, Jindal A, Mahapatra DK. Role of Pharmacist in Nutrition Management—The Unexplored Path. Indian Journal of Pharmacy Practice. 2023;16(2). https://doi.org/10.5530/ijopp.16.2.14
29. Alshahrani SM. Knowledge, Attitudes, and Practices of Community Pharmacists About Nutrition and Lifestyle Medications and Counseling in the Aseer Region of Saudi Arabia: A Cross-Sectional Study. Cureus. 2025;17(6). https://doi.org/10.7759/cureus.85757
30. Siddique A, Ahmed E, Al Zoghabi M, Alsaif E, Alhawshani F. Exploring Community Pharmacist's Knowledge, Attitude, and Practice Toward the Provision of Pharmaceutical Care: A Prospective Cross-Sectional Study from Saudi Arabia. Journal of Pharmacy and Bioallied Sciences. 2022;14(1). https://doi.org/10.4103/jpbs.jpbs_16_21
31. Pratiwi RE, Kartiningrum ED, Mahmudah RL. Cadre Role and Performance in Preventing Stunting in Dolo, Central Sulawesi. Journal of Public Health and Pharmacy. 2025;5(3):582–589. https://doi.org/10.56338/jphp.v5i3.6051
32. Medhat M, Sabry N, Ashoush N. Knowledge, Attitude and Practice of Community Pharmacists Towards Nutrition Counseling. International Journal of Clinical Pharmacy. 2020;42(6):1456–1468. https://doi.org/10.1007/s11096-020-01106-0
33. Kumaki R, Hatamoto M, Iida R, Kishimoto K. Toward Enhanced Nutritional Interventions in Community Pharmacies: Personal Attitude Construct Analysis. Journal of Health, Population and Nutrition. 2025;44:287. https://doi.org/10.1186/s41043-025-01035-6
34. Ikatan Apoteker Indonesia. Standar Kompetensi Apoteker Indonesia. Jakarta: Ikatan Apoteker Indonesia; 2016.
35. Hijazi MA, Shatila H, El-Lakany A, Al Rifai H, Aboul-Ela M, Naja F. Role of Community Pharmacists in Weight Management: Results of a National Study in Lebanon. BMC Health Services Research. 2020;20:386. https://doi.org/10.1186/s12913-020-05258-7
36. Ayele AA, Cosh S, Islam MS, East L. Role of Community Pharmacy Professionals in Child Health Service Provision in Ethiopia: A Cross-Sectional Survey in Six Cities of Amhara Regional State. BMC Health Services Research. 2022;22:1259. https://doi.org/10.1186/s12913-022-08641-8
37. Kelly D, Chawke J, Keane M, Conway H, Douglas P, Griffin A. An Exploration of the Self-Perceived Nutrition Competencies of Pharmacists. Exploratory Research in Clinical and Social Pharmacy. 2022;8:100203. https://doi.org/10.1016/j.rcsop.2022.100203
38. Ansar A, AM S. Review on Role of Pharmacist in Nutrition and Health Care. International Journal of Research Publication and Reviews. 2024;5(4):6430–6433. https://doi.org/10.2139/ssrn.4909110
39. Viegas R, Dineen-Griffin S, Söderlund LÅ, Acosta-Gómez J, Guiu JM. Telepharmacy and Pharmaceutical Care: A Narrative Review by International Pharmaceutical Federation. Farmacia Hospitalaria. 2022;46(7):86–91. https://doi.org/10.7399/fh.13244
40. Yang DW, Noh Y, Son KB. Public Perceptions of Pharmacy Services: Perceived Importance and Face-to-Face Preference Across Service Stages in the Era of Digital Health. Digital Health. 2025;11:1–11. https://doi.org/10.1177/20552076251361630
41. Sharn AR, Oliveros E, Lai S, Sanchez CP, Villa-Real Guno MJ, Rojas Montenegro C. Multi-Faceted Nutritional Interventions Are Imperative to Reduction of Stunting Among Children in Low- and Middle-Income Countries. Frontiers in Nutrition. 2025;12. https://doi.org/10.3389/fnut.2025.1479850
42. Widiasih R, Sunjaya DK, Rahayuwati L, Rusyidi B, Ermiati, Sari CWM, et al. Evaluating the Knowledge, Roles, and Skills of Health Cadres in Stunting Prevention: A Mixed-Method Study in Indonesia. Belitung Nursing Journal. 2025;11(3):330–339. https://doi.org/10.33546/bnj.3722
43. Kanan M, Alqhatani A, Khalid W, Alzuhairy S, Almohammadi S, Alsubaie M, et al. Clinical Interventions of Community Pharmacies for Diarrhea Management: Evidences from Developing Countries. Pharmacy Practice. 2024;22(2):2962. https://doi.org/10.18549/PharmPract.2024.2.2962
44. Wigle JM, Akseer N, Mogilevskii R, Brar S, Conway K, Enikeeva Z, et al. Drivers of Stunting Reduction in the Kyrgyz Republic: A Country Case Study. American Journal of Clinical Nutrition. 2020;112(Suppl 2):830S–843S. https://doi.org/10.1093/ajcn/nqaa120

45. Soegiantoro DH, Narwadan F, Ndruru JNC, Koa O, Mahemba YS, Palunggu BU, et al. Public Perceptions of Community Pharmacists' Evolving Role in Health Promotion and Pharmaceutical Care: A Cross-Sectional Study in Indonesia. Current Pharmacy Teaching and Learning. 2026;18(5). https://doi.org/10.1016/j.cptl.2026.102600
46. Ayele AA, Cosh S, Islam MS, East L. Role of Community Pharmacy Professionals in Child Health Service Provision in Ethiopia: A Cross-Sectional Survey in Six Cities of Amhara Regional State. BMC Health Services Research. 2022;22:1259. https://doi.org/10.1186/s12913-022-08641-8
47. Kelly D, Chawke J, Keane M, Conway H, Douglas P, Griffin A. An Exploration of the Self-Perceived Nutrition Competencies of Pharmacists. Exploratory Research in Clinical and Social Pharmacy. 2022;8:100203. https://doi.org/10.1016/j.rcsop.2022.100203
48. Ansar A, AM S. Review on Role of Pharmacist in Nutrition and Health Care. International Journal of Research Publication and Reviews. 2024;5(4):6430–6433. https://doi.org/10.2139/ssrn.4909110
49. Viegas R, Dineen-Griffin S, Söderlund LÅ, Acosta-Gómez J, Guiu JM. Telepharmacy and Pharmaceutical Care: A Narrative Review by International Pharmaceutical Federation. Farmacia Hospitalaria. 2022;46(7):86–91. https://doi.org/10.7399/fh.13244
50. Yang DW, Noh Y, Son KB. Public Perceptions of Pharmacy Services: Perceived Importance and Face-to-Face Preference Across Service Stages in the Era of Digital Health. Digital Health. 2025;11:1–11. https://doi.org/10.1177/20552076251361630
51. Sharn AR, Oliveros E, Lai S, Sanchez CP, Villa-Real Guno MJ, Rojas Montenegro C. Multi-Faceted Nutritional Interventions Are Imperative to Reduction of Stunting Among Children in Low- and Middle-Income Countries. Frontiers in Nutrition. 2025;12. https://doi.org/10.3389/fnut.2025.1479850
52. Widiasih R, Sunjaya DK, Rahayuwati L, Rusyidi B, Ermiati, Sari CWM, et al. Evaluating the Knowledge, Roles, and Skills of Health Cadres in Stunting Prevention: A Mixed-Method Study in Indonesia. Belitung Nursing Journal. 2025;11(3):330–339. https://doi.org/10.33546/bnj.3722
53. Kanan M, Alqhatani A, Khalid W, Alzuhairy S, Almohammadi S, Alsubaie M, et al. Clinical Interventions of Community Pharmacies for Diarrhea Management: Evidences from Developing Countries. Pharmacy Practice. 2024;22(2):2962. https://doi.org/10.18549/PharmPract.2024.2.2962
54. Wigle JM, Akseer N, Mogilevskii R, Brar S, Conway K, Enikeeva Z, et al. Drivers of Stunting Reduction in the Kyrgyz Republic: A Country Case Study. American Journal of Clinical Nutrition. 2020;112(Suppl 2):830S–843S. https://doi.org/10.1093/ajcn/nqaa120
55. Soegiantoro DH, Narwadan F, Ndruru JNC, Koa O, Mahemba YS, Palunggu BU, et al. Public Perceptions of Community Pharmacists' Evolving Role in Health Promotion and Pharmaceutical Care: A Cross-Sectional Study in Indonesia. Current Pharmacy Teaching and Learning. 2026;18(5). https://doi.org/10.1016/j.cptl.2026.102600