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Development of Interprofessional Collaboration Model to Manage Stunting in Toddler

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Abstract--- *Surabaya, in Indonesia, has a fairly high stunting rate of 2,189 out of 20,472 toddlers. Stunting management requires interprofessional collaboration that results in higher quality health services. The purpose of this study was to develop a stunting management model with an interprofessional collaboration (IPC) approach. A cross-sectional approach included 128 health workers selected by the rule of thumb formula. Independent variables included knowledge, attitude, self-efficacy, cooperation, and communication. The dependent variable was IPC. Data collection was conducted via a questionnaire with modifications related to stunting. Data was analyzed using descriptive and SEM-PLS analysis. It was noted that the implementation model of IPC was dependent on personal factors such as knowledge, attitude, self-efficacy, collaboration, and communication, as well as the situational factors of the health workers. Of all these factors, individual personal attitudes had the largest role in the successful implementation of IPC. From structural model testing, the results showed a direct and significant effect on each exogenous factor towards endogenous factors, except for the domain factor, interprofessional collaboration (X1) and support systems (X5) = 0.299. The management of stunting in infants can take place through collaboration between health workers or interprofessional collaboration. The implementation of IPC is influenced by the personal and situational factors of health workers.*

Keywords--- C*hildren, interprofessional collaboration model, personal factors, stunting.*

I. INTRODUCTION

The period of infancy to becoming a toddler is the most important stage in the human life cycle, as this stage affects a child's growth and development. Various efforts are made to detect early occurrences of disruption in a child's growth and development. This is done by measuring body weight, height, head circumference, and arm circumference. The results of measuring a child's growth can be used as a parameter to determine their nutritional status. The nutritional status that needs special attention is stunting (short and very short) because this has an impact on intelligence, productivity, and the risk of contracting non-communicable diseases. Stunting occurs due to chronic malnutrition caused by poverty and inappropriate parenting [1].

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Decreasing the number of instances of stunting has become a sustainable development goal (SDG) for 2025. From 2015□2019 health development indicators showed that stunting in children (under two years) in 2013 was at 32.9%; the target for 2019 was to reduce this to 28.0% [2]. Indonesia has a high prevalence of stunting compared to other middle-income countries. In 2017, nutrition status monitoring (PSG) revealed that 29.6% of toddlers were stunted, which is above the WHO limit (20%) [3].

Other results of nutrition status monitoring (PSG) in 2017 showed that, of the 100 districts in Indonesia that have quite high stunting rates, 11 of them are in East Java. However, this area has shown a significant drop in numbers over the past five years, from 32.7% to 26.7%, which is slightly lower than the national figure of 27.5%. However, East Java remains one of the regions of concern as the figure is still above the 20% limit [4]. In Surabaya, 20,472 children under five were measured and their height and weight per age (TB/U) analyzed. Results showed that 2,189 infants were classed as very short, 2,922 infants were classed as short, with 15,316 children considered normal height [3].

Efforts to reduce the numbers of stunting can be conducted via various means, one of which is improving the quality of health services. One of these services includes the collaboration of various health professions, known as interprofessional collaboration (IPC) [5]. The benefits of collaboration allow team members to achieve greater targets than if they work individually; it can also benefit the organization [6]. In addition, the work of the team has also been proven to provide benefits for healthcare providers, including reducing additional workload and increasing job satisfaction [7]. Stunting services should not only be the responsibility of one profession but should be carried out by IPC consisting of two or more professions [8].

Collaborative efforts produce better health services and outcomes for the population served. According to Littlechild and Smith (cited in Green, 2015), collaboration leads to increased efficiency, increased skill mix, greater response rates, more holistic services, innovation and creativity, and more client-centered practices [6]. As the problems of stunting concern all aspects of health, it cannot be dealt with by one discipline alone. The advantages of providing multi-faceted health care make it necessary to create a development model of handling stunting based on IPC. The purpose of this research is to develop an IPC model to manage stunting in toddlers in the public health center in Surabaya.

II. Literature Review

Stunting in Children

Short toddler (Stunting) is a chronic malnutrition problem caused by a lack of nutritional intake in a long time due to feeding that is not in accordance with nutritional needs. Stunting can occur when the fetus is still in the womb and only appears when the child is two years old. Stunting is nutritional status based on the weight and the tall of body as a result body mass index where in the anthropometric standard assessment of the nutritional status of children, the measurement results are in the threshold (Z-Score) <-2 SD to -3 SD (short/ stunted) and <-3 elementary school (very short/ severely stunted). The prevalence of stunting starts to increase at the age of 3 months, then the stunting process slows down when the child is around 3 years old. There are different interpretations of stunting events between the two age groups of children [9], [10].

In children under the age of 2-3 years, describe the process of failure to grow or stunting that is still ongoing/ happening. While in children older than 3 years, describe the circumstances in which the child has experiencing growth failure or has become stunted. Various experts stated that stunting is the impact of various factors such as low birth weight, inappropriate stimulation and parenting, lack of nutrition, and recurrent infections and various other environmental factors [11], [12].

Stunting is the final indicator of all the factors that influence the growth and development of children in the first 2 years of life which will further adversely affect the physical and cognitive development of the child as they age. Rapid growth in childhood makes adequate nutrition very important. Poor nutrition during pregnancy, and growth period. Early life of a child can cause a child to become stunted. In the first 1000 days of a child's life, poor nutrition has permanent consequences. Prenatal factors such as maternal nutrition during pregnancy and postnatal factors such as child nutrition during growth, socioeconomic, exclusive breastfeeding, infectious diseases, health services and various other factors [10], [11]

Interprofessional Collaborative

Center for the Advancement of Interprofessional Education mentions, IPE occurs when two or more health professions learn together, learn from other health professions, and learn the role of each health profession to improve collaboration skills and the quality of health services. IPE is an implementation of learning that is followed by two or more different professions to improve collaboration and the quality of services and implementation can be done in all learning, both undergraduate and clinical education to create professional health workers [13], [14].

IPE is an interactive, based learning method group, which is done by creating an atmosphere of collaborative learning to realize collaborative practice, and also to convey an understanding of interpersonal, group, organization and relations between organizations as a process of professionalization. Based on the results of research conducted by the practice of collaboration between professions is defined as a variety of professions that work together as a team with the aim of improving the health of patients/ clients by mutual understanding of the boundaries that exist in each health profession. Interprofessional Collaboration (IPC) is the process of developing and maintaining effective working relationships between students, practitioners, patients/ clients/ families and the community to optimize health services. The purpose of IPE is the practice of collaboration between professions, which involves various professions in learning about how to work together by providing the knowledge, skills and attitudes needed to collaborate effectively [15], [16].

III. DATA COLLECTION

This research uses descriptive analysis with a cross-sectional approach. There were 128 participants in the study, including health workers such as doctors, nurses, midwives, nutrition workers, environmental sanitation, health analysts, and health promotion staff who worked at the public health center in Surabaya. The sample size was taken with the rule of the thumb formula. The independent variables in the study included knowledge, attitude, self-efficacy, cooperation, and communication. The dependent variable was an interprofessional collaboration (IPC). The location of this research was the community health center at the Surabaya city health office.

Of the children under five with stunting, 12 community health centers were selected by multistage random sampling. Data collection was conducted via a questionnaire, which adopts the theory of Stutsky (2014), with modifications related to stunting. There were 25 questions [17] where participants answered either true or false or they had to choose an answer using a Likert scale, with a scoring range of one to four. Data was analyzed by the correlation method and SEM-PLS analysis. The study was approved by the Ministry of Health's Health Research Ethics Committee in Surabaya number EA/017/KEPKPoltekkes_Sby/V/2019.

IV. Data Analysis

The results of the descriptive analysis of each variable, regression analysis, and the results of SEM-PLS analysis on IPC are included. Table 1 shows the distribution of the characteristics of the research respondents.

Table 1: Distribution of respondent characteristics in Surabaya City health center, April–May 2019

Characteristics	Frequency	Percentage
Profession		
Doctor/dentist	23	18.0
Midwife	66	51.6
Nurse	14	10.9
Nutritionists	16	12.5
Sanitarian	5	3.9
Health promotion etc.	4	3.1
Age (years)		
21–25	15	11.7
26–30	30	23.4
31–35	34	26.6
36–40	16	12.5
41–45	9	7.0
46–50	8	6.3
> 50	16	12.5
Gender		
Male	11	8.6
Female	117	91.4
Education		
Vocational	76	59.4
Bachelor	49	38.3
Master	3	2.3
Length of employment (years)		
1–3	37	28.9
4–6	14	10.9
7–9	17	13.3
≥ 10	60	46.9
Involvement with stunting program (years)		
1–3	86	67.2
4–6	9	7.0
7–9	11	8.6
≥ 10	11	8.6
Training on stunting		
Yes	104	81.3
No	24	18.7

The respondents in this study all worked at the health center, with the majority being midwives (51.6%), between the age of 31–35 years (26.6%), mostly female (91.4%), and most had been educated to diploma level (59.4%). Most employees had worked at the health center for 1–3 years (28.9%), had been involved in the stunting program for 1–3 years (67.2%), and as many as 81.3% had received training on stunting.

Table 2: Frequency distribution of personal respondent factors in the Surabaya health center, March– May 2019

No.	Parameter	Category	Frequency		Mean	SD
			Σ	%		
1	Knowledge	Well	79	61.7	0.60	0.30
		Enough	9	7.0		
		Less	40	31.3		
2	Attitude	Positive	93	72.7	10.59	4.27
		Negative	35	27.3		
3	Beliefs about IPC	Very sure	40	31.3	66.08	20.34
		Pretty sure	59	46.0		
		Not sure	29	22.7		
4	Cooperation	Well	31	24.2	61.52	22.47
		Enough	48	37.5		
		Less	49	38.3		
5	Communication	Well	37	28.9	61.02	23.62
		Enough	43	33.6		
		Less	48	37.5		

Table 2 shows that 61.7% of health workers had a good knowledge of IPC, 72.7% had a positive attitude and were quite confident in their beliefs about IPC (46.0%). However, the results show that cooperation and communication about IPC could be greatly improved.

Table 3: T-test results from exogenous to endogenous latent variables and path parameter coefficient values in structural models

No.	Pathway	Path parameter coefficient	T-statistic	T-table	Information
1	*(X1) Personal factors → γ (X3) IPC domain*	0.299	4,551	1.96	Significantly positive
2	*(X2) Situational factors → γ (X3) IPC domain*	0.430	5,816	1.96	Significantly positive
3	*(X3) Interprofessional Domain Collaboration → γ (X4) Output provider*	0.673	11,338	1.96	Significantly positive
4	*(X3) Interprofessional Domain Collaboration → γ (X5) Support system*	-0.029	0.299	1.96	Not significant
5	*(X3) Interprofessional Domain Collaboration → γ (Y1) Performance of the process (the management of stunting)*	0.293	2,485	1.96	Significantly positive
6	*(X4) Provider output → γ* (Y1) *Process performance*	0.294	3,057	1.96	Significantly positive

7	*(X5) Support system → γ (Y1) Process performance*	0.152	2,546	1.96	Significantly positive
8	*(Y1) Process performance → γ (Y2) Output performance*	0.144	2,279	1.96	Significantly positive

The analysis of structural models testing shows the influence of exogenous factors to endogenous factors. The reference value is that if the calculated T-statistic value is greater than the T-table value, then the exogenous factors of knowledge, attitude, self-efficacy, cooperation, and communication, affect the endogenous factors, namely IPC. If there is an error tolerance (α) = 5% and total data 128, then the value of T-table = $T_{(df = n-1;\ \alpha / 2)} = T_{(221;\ 0.025)} = 1.96$.

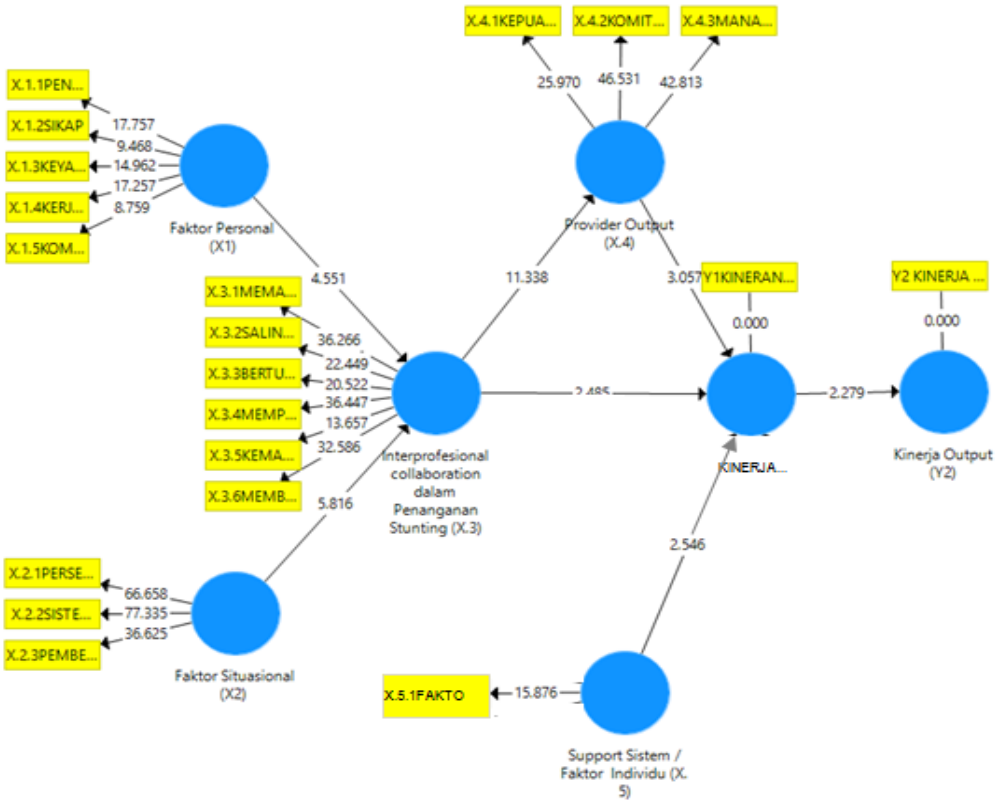

Figure 1: Structural model testing results

The test results of the structural model showed direct and significant effects on each exogenous factor towards endogenous factors, namely personal knowledge (X1) on IPC (X3) domain = 4,551. Situational factors (X2) on the IPC (X3) domain = 5,816, domain IPC (X3) to provider output (X4) = 11,338, and domain IPC (X3) for stunting management (Y1) = 2,485. Provider output (X4) for stunting management was (Y1) = 3,057, support system (X5) for

stunting management (Y1) = 2,546 and stunting management (Y1) for output performance (Y2) = 2,279, except in the domain of IPC (X3) against the support system (X5) = 0.299.

V. Study Results, Summary And Contribution

The IPC model for handling stunting in children under five is influenced by personal factors in the form of knowledge, attitudes, self-efficacy, cooperation, and communication. This is in line with the results of Noor Ariyani (2017), who found that collaboration between health service providers was necessary for any health care setting because there was no single profession that could meet the needs of all patients. As a result, good quality of service depends on professionals working together in interprofessional teams [18].

Personal factors concerning IPC can enhance its implementation and effectiveness. In line with O' Daniel (2016), a component of effective teamwork is open communication, a free environment, having clear goals, and clear roles and tasks for team members.

Other factors include respect, sharing responsibility for the team's success, balanced participation of each team member in carrying out tasks, confession and conflict management, clear specifications on authority and accountability, clarity in decision-making procedures, communicating and sharing information regularly and routinely, a supportive environment (including access to needed resources), and mechanisms to evaluate results and making adjustments according to applicable regulations [19].

The IPC model was also influenced by situational factors, with team leaders lending support and empowering health personnel. This is in accordance with the American Association College of Nursing (2011), where administrative support from top leaders was essential in realizing an important component in the implementation of interprofessional education and collaboration [20]. The main problem with efforts in improving patient health care is the lack of design in forming a synergistic reciprocal relationship in contributing to patient health problems. The challenge we face in the future is the regulation of the health profession in a new way, which expands some roles, but may also reduce other roles, by coordinating roles and responsibilities. In this case, organizational, political, ethical, and legal problems will be encountered. However, a health system review that starts with the level of health education and other educational institutions will be the beginning of solving the problem. There is a need for health education and health service institutions to jointly facilitate the implementation of IPC in health services [21].

The perception of empowerment can increase the commitment of health workers in carrying out their duties to the best of their ability. This is in line with Utami et al. (2013), who found that psychological empowerment can increase commitment to tasks in physiological midwifery practices by midwifery students [22]. According to Stephen (2011), who acknowledges the strength of the relationship between intrinsic motivation and affective commitment, psychological empowerment has a role in increasing commitment to the organization and to the task [23].

This study has developed an IPC model for health workers, across various practices, that can be implemented in the management of toddlers with stunting. The results showed new scientific findings, namely that personal factors in the form of knowledge, attitudes, self-efficacy, collaboration, and communication can improve interprofessional

collaboration. This collaboration consists of the ability to understand individual roles and the role of the management team, the ability to exchange knowledge, have a common goal, and provide client-centered services in handling stunting for children under five. In addition, situational factors about IPC such as leadership support and empowerment of health workers can also improve collaboration in handling stunting in children under five. Other findings from this study are that IPC can increase provider outputs (satisfaction, commitment, and conflict management) and the performance of health personnel, but it cannot improve the support system or cooperation from the family.

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