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VALIDITY AND RELIABILITY OF THE CLEAN AND HEALTHY LIVING BEHAVIOR (CHLB) QUESTIONNAIRE IN RELATION TO STUNTING INCIDENCE IN BONDOWOSO REGENCY

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Abstrak

Stunting masih menjadi masalah kesehatan masyarakat yang berdampak pada pertumbuhan fisik, perkembangan kognitif, serta produktivitas individu. Kabupaten Bondowoso memiliki prevalensi stunting yang tinggi, salah satunya disebabkan oleh rendahnya penerapan perilaku hidup bersih dan sehat (PHBS) di rumah tangga. Penelitian ini bertujuan untuk mengembangkan dan menguji validitas serta reliabilitas kuesioner PHBS tatanan rumah tangga dalam menganalisis keterkaitannya dengan kejadian stunting. Penelitian dilakukan di Desa Sumber Jeruk, Kabupaten Bondowoso, dengan desain deskriptif kuantitatif. Sampel penelitian sebanyak 75 responden dipilih menggunakan rumus Slovin dengan metode simple random sampling. Data dianalisis dengan uji validitas pearson dan reliabilitas cronbach's alpha menggunakan SPSS 23.0. Hasil analisis menunjukkan bahwa semua data dinyatakan valid karena nilai uji Pearson lebih dari 0,2272. Kuesioner ini memiliki reliabilitas yang baik dengan nilai cronbach's alpha pada pengetahuan responden terhadap PHBS tatanan rumah tangga sebesar 0,849, sikap responden 0,832, keterpaparan informasi 0,853, dukungan tenaga kesehatan 0,805, sarana dan prasarana 0,709, kebijakan terhadap PHBS 0,711, dan dukungan tokoh masyarakat 0,717. Dengan demikian, kuesioner ini dapat digunakan sebagai alat ukur yang valid dan reliabel dalam mengevaluasi serta meningkatkan penerapan PHBS tatanan rumah tangga guna mendukung upaya pencegahan stunting di masyarakat.

Kata kunci: *Stunting, PHBS, Validitas, Reliabilitas*

Abstract

Stunting remains a major public health problem affecting physical growth, cognitive development, and individual productivity. Bondowoso Regency has a high prevalence of stunting, partly due to the low implementation of Clean and Healthy Living Behavior (CHLB) in households. This study aimed to develop and test the validity and reliability of a household-level CHLB questionnaire in analyzing its correlation with stunting incidence. Conducted in Sumber Jeruk Village, Bondowoso Regency, the research used a descriptive quantitative design with 75 respondents selected through simple random sampling based on Slovin's formula. Data were analyzed using Pearson's validity test and Cronbach's alpha reliability test with SPSS 23.0. The analysis results showed that all data were valid, as the Pearson test values were greater than 0.2272. The questionnaire demonstrated good reliability with Cronbach's alpha values of 0.849 for respondents' knowledge of household-level CHLB, 0.832 for respondents' attitudes, 0.853 for exposure to information, 0.805 for health worker support, 0.709 for facilities and infrastructure, 0.711 for policy towards CHLB, and 0.717 for community leader support. Thus, the questionnaire could be used as a valid and reliable tool to evaluate and improve the implementation of household-level CHLB to support stunting prevention efforts in the community.

Keywords*: Stunting, CHLB, Validity, Reliability, Behavioral*

INTRODUCTION

Stunting remained a serious public health issue in Indonesia as it affected physical growth, cognitive development, and future individual productivity (Yuwanti et al., 2021). Although the national stunting prevalence had declined, Bondowoso Regency still recorded a high rate of 17% in 2023. This

figure had not yet reached the Sustainable Development Goals (SDGs) target of 14% by 2024 (Kementerian Kesehatan RI, 2017). Environmental factors, such as poor sanitation and the low adoption of Clean and Healthy Living Behavior (CHLB), contributed to stunting incidence. Previous studies indicated that inadequate sanitation increased the risk of stunting in toddlers (Ainy et al., 2021a; Ismy & Wahyuni, 2019). Lawrence Green's behavioral theory explained that health behavior was influenced by predisposing, enabling, and reinforcing factors, such as knowledge, attitudes, facilities, as well as healthcare and community support (Merina et al., 2021). A CHLB survey conducted by the Bondowoso Regency Health Office revealed that only 37.78% of households implemented CHLB in 2023, which was still below the national target of 55% (Dinkes, 2023). The low adoption of household-level CHLB might have been one of the contributing factors to the high stunting rate in Bondowoso Regency.

The low implementation of household-level CHLB contributed to the high stunting rate in Bondowoso Regency as it was linked to environmental hygiene, dietary patterns, and individual health. Poor sanitation increased the risk of infectious diseases, such as diarrhea and acute respiratory infections (ARI), which hindered nutrient absorption and led to growth disorders in children (Ismy & Wahyuni, 2019; Ramadhani et al., 2023). Additionally, limited access to clean water and the use of inadequate latrines heightened exposure to pathogenic bacteria, negatively impacting children's health. Inadequate parenting practices, including a lack of parental awareness in maintaining food hygiene and providing balanced nutrition, further increased the risk of stunting (Ainy et al., 2021b, 2021a). A lack of understanding and practice of household-level CHLB made children more susceptible to recurrent infections and nutritional deficiencies, ultimately affecting their growth and development.

The implementation of household-level CHLB needed to be analyzed using an appropriate measurement tool to determine its correlation with stunting incidence in Bondowoso Regency. Lawrence Green's behavioral theory explained that health behavior was shaped by predisposing, enabling, and reinforcing factors, including knowledge, attitudes, facilities, and social support (Susanto et al., 2021). A valid and reliable research instrument was essential for accurately measuring these aspects. This study aimed to test the validity and reliability of a household-level CHLB questionnaire to be used as an effective analytical tool in assessing the factors influencing stunting. The findings were expected to provide a scientific basis for formulating policies and interventions that could enhance stunting prevention efforts in Bondowoso Regency.

RESEARCH METHODS

This study employed a descriptive research design to develop and validate a household-level Clean and Healthy Living Behavior (CHLB) instrument in relation to stunting incidence, based on Lawrence Green's behavioural theory approach. A quantitative method was applied to ensure a comprehensive instrument development and validation process. The research was conducted from November to December 2024. During this period, all stages of the research were completed, including data collection, analysis, and the final evaluation.

The study was conducted in Sumber Jeruk Village, Bondowoso Regency, an area with a high incidence of stunting. This location was selected based on the prevalence of stunting as well as the social and environmental characteristics of the community, making it an appropriate setting for developing and testing an instrument grounded in Lawrence Green's behavioural theory approach.

The research subjects comprised families with toddlers in SumberJeruk Village, Bondowoso Regency. These families were selected to evaluate the validity and reliability of the household-level CHLB questionnaire concerning stunting incidence, following the behavioural theory approach proposed by Lawrence Green.

$$n = \frac{N}{1+N.e^2} \dots 1)$$

The sample size was determined using Slovin's formula with a 5% (0.05) margin of error, resulting in 75 respondents selected from a population of 92 individuals, which was considered sufficiently representative. The sampling method employed was simple random sampling, where respondents were chosen through a random draw. The inclusion criteria in this study encompassed families with toddlers aged 0–59 months who resided in Sumber Jeruk Village and had a mother or primary caregiver responsible for childcare and toddler health. Respondents were required to consent to participate in the

study by signing an informed consent form and be registered at the local village health post (posyandu). The exclusion criteria included respondents who refused to participate, mothers or caregivers with mental disorders, toddlers with chronic medical conditions such as genetic disorders or congenital heart disease, and mothers or caregivers who were unable to read and write.

The data collection process involved several key steps: first, informed consent was obtained from participants, ensuring they understood the study's purpose and procedures. Then, participants completed the household-level Clean and Healthy Living Behavior (CHLB) questionnaire. Afterward, the questionnaires were reviewed for completeness, and any missing or unclear responses were addressed. The data was then entered into a digital system for analysis. This study tested the validity and reliability of the household-level Clean and Healthy Living Behavior (CHLB) instrument concerning stunting incidence, based on an adaptation of Lawrence Green's behavioral theory approach. The questionnaire was developed by adapting key elements of Green's theory, which emphasizes the role of predisposing, enabling, and reinforcing factors in shaping health behavior, to assess factors influencing CHLB at the household level.

The first questionnaire was the Respondents' Knowledge of Household-Level CHLB Questionnaire, consisting of 15 questions with three answer choices: a, b, and c. Correct answers were scored as 1, while incorrect answers were scored as 0. The total score ranged from 0 to 15, categorized as Good (11–15), Fair (8–10), and Poor (0–7). The second questionnaire was the Respondents' Attitude Toward Household-Level CHLB Questionnaire, consisting of 10 statements with responses coded as Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1). The total score ranged from 10 to 50, categorized as Good (38–50), Fair (28–37), and Poor (<28).

The third questionnaire was the Facilities and Infrastructure for Household-Level CHLB Questionnaire, consisting of 10 dichotomous statements, coded 1 for correct answers and 2 for incorrect answers. The total score ranged from 10 to 20, categorized as Adequate (>5) and Inadequate (≤5). The fourth questionnaire was the Exposure to Information About Household-Level CHLB Questionnaire, consisting of 10 dichotomous statements, coded 1 for correct answers and 2 for incorrect answers. The total score ranged from 10 to 20, categorized as Good (18–20), Fair (16–17), and Poor (10–15).

The fifth questionnaire was the Policy on Household-Level CHLB Questionnaire, consisting of four dichotomous statements, coded 1 for correct answers and 2 for incorrect answers. The total score ranged from 4 to 8, categorized as Supportive (≥2) and Not Supportive (<2). The sixth questionnaire was the Healthcare Workers' Support for Household-Level CHLB Questionnaire, consisting of 10 Likert-scale statements with responses coded as Always (4), Often (3), Sometimes (2), and Never (1). The total score ranged from 10 to 40, categorized as Good (31–40), Fair (23–30), and Poor (<22).

The final questionnaire was the Community Leaders' Support for Household-Level CHLB Questionnaire, consisting of five dichotomous statements, coded 1 for correct answers and 2 for incorrect answers. The total score ranged from 5 to 10, categorized as Poor (5–7), Fair (8), and Good (9–10). The survey assessing 10 CHLB household indicators was conducted based on two age groups of toddlers. Households were classified as CHLB-compliant if the mother of a child aged 0–6 months scored 10 and non-CHLB-compliant if the score was <10. For mothers with children aged >6–60 months, households were classified as CHLB-compliant if the score was 7 and non-CHLB-compliant if the score was <7. The Z-score for height-for-age (HAZ) and length-for-age (LAZ) was calculated by measuring height using a microtoise and comparing it to the child's age. Stunting was categorized as Normal (Z-score ≥ -2.0), Short (Z-score < -2.0 to -3.0), and Severely Short (Z-score < -3.0).

Data were analyzed using SPSS version 23.0. Descriptive statistics were used to identify participant characteristics. Validity testing was conducted using Pearson's correlation test to measure the relationship between individual questionnaire items and the total score. Internal consistency reliability was measured using Cronbach's α coefficient, while test-retest reliability was assessed with a significance level of $\rho<0.05$. The degrees of freedom (df) for the Pearson correlation test were calculated as N - 2 = 75 - 2 = 73. The critical value for Pearson's correlation at N(73) with a significance level of 0.05 is 0.2272. The questionnaire was considered valid if the Pearson correlation value was greater than the R table value of 0.2272. Reliability was assessed using Cronbach's α coefficient, with a value greater than 0.6 indicating that the instrument was reliable. These analyses ensured that the instrument demonstrated good validity and reliability in measuring household-level CHLB concerning stunting incidence in Bondowoso Regency.

Further analysis was conducted to determine whether the CHLB questionnaire could predict stunting incidence in families. To assess this, a predictive test was performed by analyzing the relationship between CHLB and stunting incidence using Pearson's Product-Moment correlation test, with a significance level of $p<0.05$.

This study was approved by the Health Research Ethics Committee (KEPK) of the Faculty of Dentistry, University of Jember, with approval number 2867/UN25.8/KEPK/DL/2024. All research procedures adhered to ethical guidelines to protect participants' rights and uphold scientific standards. Informed consent was obtained from all participants after they received a detailed explanation of the study's objectives and procedures. Data confidentiality and voluntary participation were strictly maintained throughout the research process.

RESULTS AND DISCUSSION

RESULT

Respondent Characteristics

Table 1. Characteristics of Respondents Validity of Clean and Healthy Living Behaviour (CHLB) instrument on stunting incidents in Bondowoso Regency (N=75)

Characteristics	Frequency (%)
Age	
17-25 years	34 (45.3)
26-35 years	39 (52.0)
36-45 years	2 (2.7)
Education	
Not School	1 (1.3)
Elementary School	25 (33.3)
Junior High School	14 (18.7)
High School	29 (38.7)
College	6 (8.0)
Work	
Housewife	70 (93.3)
Farmer	3 (4.0)
Trader	2 (2.7)
Mother's Age at Marriage	
≤ 21 years	58 (77.3)
22 – 35 years	17 (22.7)
Respondents' Ethnic Origin	
Madura	67 (89.3)
Java	8 (10.7)

(Source: Primary Research Data, 2024)

Respondents in this study amounted to 75 people, the majority of respondents were aged 26-35 years (52.0%), had the latest education equivalent to High School (38.7%), and worked as housewives (93.3%). Most mothers were married at the age of ≤21 years (77.3%) and came from the Madurese ethnic group (89.3%).

Table 2. Clean and Healthy Living Behaviour (CHLB) of Households in Bondowoso Regency (N=75)

Characteristics	Frequency (%)
Household	
Healthy	21 (28.0)
Not healthy	54 (72.0)

(Source :Primary Research Data, 2024)

Table 2 shows Clean and Healthy Living Behaviour (CHLB) in Bondowoso Regency based on 75 respondents. Of the total households surveyed, only 28.0% were categorized as healthy, while 72.0% were unhealthy.

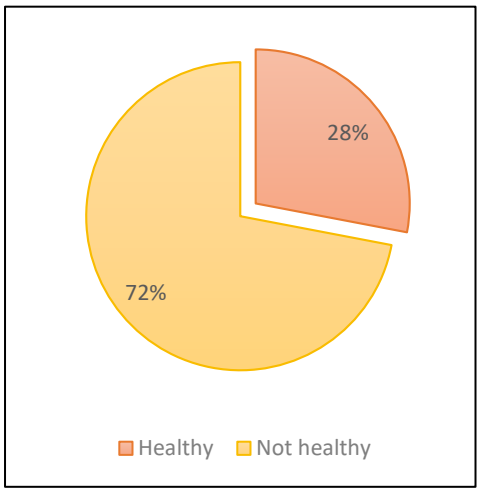

Figure 1. Clean and Healthy Living Behavior (CHLB) Bondowoso Regency (N=75)
(Source: Primary Research Data, 2024)

Figure 1 shows clean and healthy living behaviour (CHLB) in Bondowoso Regency in 75 respondents, the majority of whom were in the unhealthy category, as many as 54 respondents**.**

Table 3. Z Score Value in Bondowoso Regency (N=75)

Characteristics	**Frequency (%)**
Z Score (Mean ±SD)	-1.43 ±1.44
Normal	50 (66.7)
Stunting	15 (20.0)
Severe Stunting	10 (13.3)

(Source: Primary Research Data, 2024)

Table 3 shows the distribution of Z Score values in children in Bondowoso Regency based on 75 respondents. Most children, namely 66.7%, have normal nutritional status. However, 20.0% of children are included in the short category, and another 13.3% are classified as very short, indicating a stunting problem.

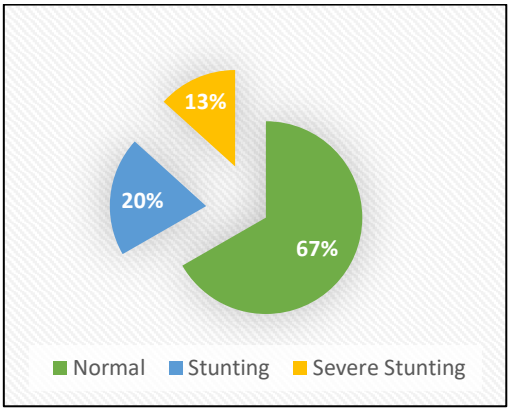

Figure 2. Z Score Value in Bondowoso Regency. (N=75)
(Source : Primary Research Data, 2024)

Figure 2 shows the category values of the results of the Z Score measurements of Height/Age or Height/Age on 75 respondents who were divided into 50 normal respondents, 15 stunting respondents, and 10 severe stunting respondents.

Table 4. Results of the Validity and Reliability Test of the Clean and Healthy Living Behavior (CHLB) Instrument on the incidence of stunting in Bondowoso Regency

No	Questionnaires and Questions/Statements	Pearson Correlation	CITC	CAID
	Respondents' Knowledge of Clean and Healthy Household Behaviour (CHLB)		**Cronbach's α** = 0.849	
1.	Clean and healthy living behavior (CHLB) is: a. Behavior that is practiced on the basis of awareness as a result of learning so that individuals, families and communities are able to help themselves in the health sector. b. Efforts to provide learning experiences or create individual or group conditions to improve knowledge, attitudes and behavior in order to implement healthy lifestyles. c. Providing information and conducting education, to improve knowledge, attitudes and behavior	0.702	0.623	0.831
2.	One of the indicators of household CHLB is: a. Wash your hands with soap and clean running water b. Using public toilets c. Ownership of health insurance	0.540	0.480	0.842
3.	Childbirth should be assisted by: a. Health workers (doctors/midwives) b. People who have experience assisting with childbirth c. People who have and dare to help with childbirth	0.747	0.707	0.832
4.	What is meant by exclusive breastfeeding: a. Give only breast milk without additional food for 6 months b. Give breast milk and additional food c. Breastfeeding up to 2 years	0.435	0.342	0.847
5.	What is the purpose of weighing toddlers every month: a. Monitoring toddler growth b. In order to get additional food c. Because the toddler is sick	0.723	0.637	0.830
6.	One source of clean water is: a. The pump well water is at least 10 meters from the waste disposal site. b. The well water pump is less than 10 meters from the waste disposal site c. River water	0.674	0.583	0.834
7.	Washing hands should be done using: a. Soap and clean running water b. Water in the bucket c. Just water only	0.428	0.345	0.847
8.	The use of washing hands before and after doing work is to prevent hands from: a. Microorganisms and germs that can cause disease b. Causes of disease c. Treating diseases	0.747	0.707	0.832
9.	Eating fruit and vegetables should: a. Every day b. Once every 2 days c. Once a week	0.357	0.261	0.851
10.	The goals of daily physical activity are: a. To keep the body healthy and fit b. To live healthy but tired c. It is a clean lifestyle	0.668	0.570	0.835
11.	What is the purpose of 3M plus (draining, covering, burying, avoiding mosquito bites): a. Freeing the house from mosquito larvae b. Make the house clean c. It is a clean lifestyle	0.568	0.463	0.842
12.	Smoking should be done in: a. Outside the house b. Inside the house c. In the room	0.424	0.348	0.846
13.	The consequences of smoking at home are: a. TB b. Influenza (flu) and headaches c. Difficulty breathing	0.684	0.629	0.834
14.	The requirements for a healthy toilet are: a. > 10 meters and there is lighting b. 5 meters and easy to clean c. 10 meters	0.386	0.290	0.850
15.	One of the characteristics of a healthy toilet is: a. Availability of sufficient water b. The toilet is in a plunge-shaped form and has a waste container. c. Pitched toilet	0.555	0.433	0.845
No.	**Respondents' Attitudes Towards Clean and Healthy Living Behaviour (CHLB) in Household Order**		**Cronbach's α =0.832**	
1.	Clean and healthy living behavior is one of the actions in preventing disease.	0.702	0.592	0.809
2.	Every time you give birth you must be accompanied by a health worker.	0.631	0.543	0.816

3.	Babies should only be given breast milk (without food and canned milk) until the age of 6 months without additional food.	0.688	0.608	0.810
4.	Weighing babies and toddlers is an activity that families must do every month.	0.532	0.404	0.828
5.	Washing hands with soap can prevent the spread of infectious diseases	0.687	0.563	0.813
6.	After defecating, there is no need to wash your hands with soap.	0.733	0.630	0.805
7.	Vegetables and fruit are important foods to prepare every day in the family menu	0.681	0.600	0.811
8.	Not doing physical activity can be detrimental to health	0.475	0.361	0.830
9.	Defecate preferably in the family latrine (use a septic tank and goose neck)	0.503	0.383	0.829
10.	Smoking should be done outside the home	0.687	0.567	0.812
No.	**Facilities and Infrastructure for Clean and Healthy Living Behavior (CHLB) Household Order**		**Cronbach's α =0.709**	
1.	Does your house have a garbage disposal (trash can)?	0.727	0.600	0.640
2.	Does your house have a well with clear water?	0.558	0.436	0.678
3.	Does your house have a toilet/toilet?	0.699	0.595	0.651
4.	Is your house floor made of cement?	0.413	-0.200	0.773
5.	Does your house have a wastewater drain (washing water)?	0.759	0.645	0.631
6.	Does your house have hand washing soap?	0.672	0.528	0.655
7.	Is there always water when using the toilet at your place?	0.409	0.246	0.705
8.	Is there land in your area that can be used to build a toilet/WC?	0.699	0.595	0.651
9.	If a family member is sick, should they be taken straight to the health center?	0.445	-0.141	0.764
10.	Do you always take advantage of the health service facilities available at the community health center?	0.679	0.538	0.653
No.	**Exposure to Information on Clean and Healthy Living Behaviour (CHLB) in Households**		**Cronbach's α =0.853**	
1.	Have you ever received counselling about the benefits of CHLB?	0.779	0.696	0.825
2.	Have you ever received counseling about the objectives of CHLB?	0.614	0.525	0.842
3.	Have you ever received counseling about CHLB indicators?	0.666	0.578	0.837
4.	Have you ever received counselling about CHLB strategies?	0.767	0.681	0.827
5.	Have you ever received counselling about bowel movement behaviour?	0.675	0.563	0.839
6.	Have you ever received counseling about washing hands with soap?	0.442	0.315	0.858
7.	Have you ever received any education about waste management?	0.752	0.662	0.829
8.	Have you ever received any education about food safety?	0.653	0.574	0.839
9.	Have you ever received counseling about exclusive breastfeeding?	0.639	0.554	0.840
10.	Have you ever received counseling on mosquito larvae eradication?	0.578	0.446	0.850
No.	**Policy on Clean and Healthy Living Behavior (CHLB) in Household Order**		**Cronbach's α =0.711**	
1.	Does the village/sub-district/district/district government provide CHLB household coaching and supervise its implementation?	0.729	0.480	0.659
2.	Does the village/sub-district/district/district government seek financial assistance and other resources to support household CHLB development?	0.865	0.111	0.701
3.	Does the village/sub-district/district/district government provide supporting facilities for the smooth running of CHLB household development?	0.443	0.158	0.813
4.	Does the government carry out recording and reporting of household CHLB in the accountability reports of village/sub-district heads?	0.851	0.389	0.719
No.	**Health Worker Support for Clean and Healthy Living Behavior (CHLB) in Household Order**		**Cronbach's α =0.805**	
1.	Health workers provide information about childbirth at health workers (doctors/midwives) at health facilities.	0.699	0.579	0.775
2.	Health workers provide information about exclusive breastfeeding to mothers who visit health centres/integrated health posts/during home visits.	0.551	0.465	0.792
3.	Health workers make home visits to provide information on eradicating mosquito nests in the home.	0.773	0.720	0.771
4.	Health workers provide guidance or accompany the community when they need direction, such as when building healthy toilets.	0.461	0.328	0.803
5.	Health workers practice hand washing steps with clean water and soap	0.728	0.598	0.773
6.	Health workers do not recommend consuming clean water without boiling/processing it first because it is not good for your health.	0.695	0.565	0.778
7.	Health workers recommend that consuming fruit and vegetables every day is very good for helping to maintain a healthy body condition.	0.482	0.368	0.799
8.	Health workers do not inform toddlers to weigh them regularly at health centers, integrated health posts, etc.	0.773	0.720	0.771
9.	Health workers do not inform that smoking in the house is a dangerous act for the health of other family members.	0.309	0.167	0.818
10.	Health workers do not provide information that doing physical activity every day can maintain body health.	0.661	0.509	0.787
No.	**Support from Community Leaders for Clean and Healthy Living Behavior (CHLB) in Household Order**		**Cronbach's α =0.717**	
1.	Do community leaders recommend giving birth in health facilities?	0.605	0.405	0.696
2.	Do community leaders invite people to the integrated health post every month?	0.752	0.553	0.636
3.	Do community leaders invite people to participate in clean Friday activities?	0.856	0.726	0.554
4.	Do community leaders provide sports facilities?	0.769	0.581	0.623
5.	Do community leaders urge people not to smoke in the house?	0.397	0.143	0.780

CITC: Corrected Item-Total Correlation

CAID: Cronbach's Alpha if Item Deleted

(Source: Primary Research Data, 2024)

Validity and Reliability Analysis

The results all Pearson correlation values were greater than the R table value of 0.2272 for N(73) at a significance level of 0.05, indicating that the questionnaire is valid. From the reliability analysis, it was found that the Clean and Healthy Living Behaviour (CHLB) Instrument for stunting incidents in Bondowoso Regency. has good internal consistency (Table 4). Cronbach's α for all items is 0.766. The Cronbach's α value for each main dimension is as follows: The Cronbach's Alpha value for each category in the questionnaire shows a fairly good level of reliability. Respondents' Knowledge of Clean and Healthy Living Behaviour (CHLB) in Household Order has a reliability of 0.849, followed by Respondents' Attitudes with 0.832, and Information Exposure which has the highest value, which is 0.853. Support from Health Workers also shows good reliability with 0.805, while Facilities and Infrastructure and Policies for CHLB have values of 0.709 and 0.711, which are still in the acceptable category. Support from Community Leaders for CHLB has a value of 0.717, which shows a fairly good level of internal consistency.

Table 5. Prediction Between CHLB and Stunting Incidence

Variables	Knowledge	Attitude	Infrastructure	Exposure to information	Policy	Health worker support	Support from community leaders	Z score
Knowledge	1	0.469 **	-0.717 **	-0.697 **	-0.531 **	0.985 **	-0.671 **	-0.058 *
Attitude	0.469 **	1	-0.195 **	-0.334 **	-0.210 **	0.456 **	-0.310 **	-0.150 *
Infrastructure	-0.717 **	-0.195 **	1	0.929 **	0.821 **	-0.726 **	0.893	0.114 *
Exposure to information	-0.697 **	-0.334 **	0.929 **	1	0.910 **	-0.702 **	0.927 **	0.114 *
Policy	-0.531 **	-0.210 **	0.821 **	0.910 **	1	-0.532 **	0.856 **	0.123 *
Health worker support	0.985 **	0.456 **	-0.726 **	-0.702 **	-0.532 **	1	-0.671 **	-0.037 *
Support from community leaders	-0.671 **	-0.310 **	0.893 **	0.927 **	0.856 **	-0.671 **	1	0.153 *
Z score	-0.058 *	-0.150 *	0.114 *	0.114 *	0.123 *	-0.037 *	0.153 *	1

Note: Significance if *p<0.05; **p<0.01
(Source: Primary Research Data, 2024)

The results of the product moment correlation analysis (r) in table 5 show that knowledge has a significant positive relationship with attitude ($r = 0.469$, $p < 0.01$), meaning that the higher the knowledge, the better the attitude towards CHLB. Conversely, knowledge is negatively correlated with infrastructure ($r = -0.717$, $p < 0.01$), exposure to information ($r = -0.697$, $p < 0.01$), and policy ($r = -0.531$, $p < 0.01$), indicating that individuals with high knowledge tend to face fewer obstacles in these aspects. Health worker support has a strong positive correlation with knowledge ($r = 0.985$, $p < 0.01$) and policy ($r = 0.856$, $p < 0.01$), indicating that the greater the support of health workers, the higher the knowledge and effectiveness of policies related to CHLB. In addition, the Z score (indicator of stunting incidence) showed a significant negative relationship with attitude ($r = -0.150$, $p < 0.05$), indicating that better attitudes regarding CHLB are associated with a lower risk of stunting.

DISCUSSION

The questionnaire used in this study played a crucial role in analyzing the relationship between Clean and Healthy Living Behaviour (CHLB) in household settings and the incidence of stunting. Stunting remained a serious public health issue in Indonesia as it affected physical growth, cognitive development, and future productivity (Yuwanti et al., 2021). Based on Lawrence Green's behavioural theory, health behaviour was influenced by predisposing, enabling, and reinforcing factors, including knowledge, attitudes, facilities, and support from healthcare professionals and the community (Sinaga & Fidorova, 2023). Measuring various aspects contributing to stunting, such as knowledge levels, attitudes, and access to healthcare facilities, was crucial. A valid and reliable instrument was required to ensure that the collected data could serve as a foundation for developing more effective intervention policies to reduce stunting rates, particularly in Bondowoso Regency, which still had a high prevalence of stunting (Kemenkes RI, 2022).

Each category within the questionnaire played an essential role in understanding the factors influencing Clean and Healthy Living Behaviour (CHLB) and its relationship with stunting in

Bondowoso Regency. The Respondents' Knowledge of CHLB Questionnaire, with a reliability score of 0.849, confirmed that public understanding of health practices significantly impacted the behaviours they adopted in daily life. Previous research indicated that better knowledge of CHLB was associated with higher compliance in maintaining sanitation and healthy dietary habits, ultimately reducing the risk of stunting (Dhefiana et al., 2023; Zuhra et al., 2022). The Respondents' Attitudes Toward CHLB Questionnaire, with a reliability score of 0.832, measured how individuals' perceptions and beliefs regarding the importance of healthy behaviours influenced their practices. A positive attitude toward CHLB, such as the habit of handwashing and using proper sanitation facilities, had been proven to have a significant relationship with children's nutritional status (Apriani, 2018; Handika et al., 2022).

The Information Exposure to CHLB category, with the highest reliability score (0.853), emphasized that access to health information played a crucial role in shaping community behaviour. Communities with access to accurate health information were more likely to consistently implement CHLB, leading to a reduction in stunting rates (Ainy et al., 2021b; Ismy & Wahyuni, 2019). The Healthcare Support Questionnaire, with a reliability score of 0.805, indicated that healthcare professionals played a vital role as change agents in increasing public awareness and understanding of CHLB. Support from healthcare professionals had been proven to encourage the adoption of healthy behaviours within families, thereby contributing to stunting prevention (Bukit et al., 2021; Whindanahi & Deviliawati, 2021).

The Infrastructure and Facilities for CHLB Questionnaire, with a reliability score of 0.709, and the Policy for CHLB Questionnaire, with a reliability score of 0.711, demonstrated that the presence of supportive infrastructure and regulations significantly influenced efforts to prevent stunting. The availability of clean water, proper sanitation, and other hygiene facilities was a key factor in reducing the risk of infectious diseases that could worsen children's nutritional status (Herawati et al., 2020; Merina et al., 2021). The Community Leader Support for CHLB Questionnaire, with a reliability score of 0.717, highlighted the importance of social roles in driving behavioural changes at the community level. Support from community leaders could enhance collective awareness and strengthen the implementation of CHLB within communities, contributing to stunting prevention in Bondowoso Regency (Keswara et al., 2019). Thus, the validity and reliability of this questionnaire were key to ensuring that the research findings could be used to develop more effective policies and interventions in addressing stunting.

The analysis results showed that the Z-score had a significant negative relationship with attitudes toward Clean and Healthy Living Behaviour (CHLB). This finding indicated that the more positive an individual's attitude toward CHLB, the lower the risk of stunting. A good attitude toward CHLB reflected a better understanding of the importance of health practices that supported child growth. A positive attitude toward health behaviours was associated with improved nutritional status and optimal child growth (Handika et al., 2022; Rasni et al., 2019; Sutriyawan et al., 2021). A good attitude toward CHLB could also influence parenting styles, ultimately impacting adequate nutritional intake and the prevention of infectious diseases contributing to stunting (Alam & Kumar, 2023; Dhefiana et al., 2023; Susanto et al., 2021). Therefore, raising awareness and educating families and communities about CHLB was a strategic step in reducing stunting rates.

This questionnaire was a valid and reliable instrument for assessing the factors influencing clean and healthy living behaviour (CHLB) and its relationship with stunting. Based on Lawrence Green's behavioural theory, predisposing, enabling, and reinforcing factors played a role in shaping community health behaviours (Yuwanti et al., 2021). Studies showed that knowledge, attitudes, and information exposure were closely related to the implementation of CHLB, which could prevent stunting ((Alam & Kumar, 2023; Dhefiana et al., 2023; Susanto et al., 2021). Additionally, adequate sanitation facilities and supportive policies contributed to reducing the risk of infectious diseases affecting children's nutritional status (Ainy et al., 2021a; Ismy & Wahyuni, 2019). Support from healthcare professionals and community leaders also played a role in strengthening the implementation of CHLB within communities (Bukit et al., 2021; Whindanahi & Deviliawati, 2021). Thus, this questionnaire could serve as an effective measurement tool for evaluating and improving CHLB implementation to support stunting prevention efforts in Bondowoso Regency.

CONCLUSIONS AND SUGGESTIONS

The questionnaire developed in this study was proven to be valid and reliable in assessing the factors influencing Clean and Healthy Living Behavior (CHLB) and its correlation with stunting incidence. Factors such as knowledge, attitudes, information exposure, and environmental support played a crucial role in shaping healthy behaviors that could prevent stunting. Additionally, the availability of sanitation facilities and supportive policies contributed to reducing the risk of diseases that affected children's nutritional status. Thus, this questionnaire could serve as an effective measurement tool for evaluating and improving CHLB implementation to support stunting prevention efforts, particularly in Bondowoso Regency.

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REFERENCES

Ainy, F. N., Susanto, T., & Susumaningrum, L. A. (2021a). The relationship between environmental sanitation of family and stunting among under-five children: A cross-sectional study in the public health center of jember, indonesia. *Nursing Practice Today*, *8*(3), 173–178. https://doi.org/10.18502/npt.v8i3.5932

Ainy, F. N., Susanto, T., & Susumaningrum, L. A. (2021b). The relationship between environmental sanitation of family and stunting among under-five children: A cross-sectional study in the public health center of jember, indonesia. In *Nursing Practice Today* (Vol. 8, Issue 3). Nursing Practice Today. https://doi.org/10.18502/npt.v8i3.5932

Alam, I., & Kumar, M. (2023). A novel authentication protocol to ensure confidentiality among the Internet of Medical Things in covid-19 and future pandemic scenario. *Internet of Things (Netherlands)*, *22*, 1–16. https://doi.org/10.1016/j.iot.2023.100797

Apriani, L. (2018). Hubungan Karakteristik Ibu, Pelaksanaan Keluarga Sadar Gizi (KADARZI) Dan Perilaku Hidup Bersih Sehat (PHBS) Dengan Kejadian Stunting. *Jurnal Kesehatan Masyarakat*, *6*(4), 1–8. http://ejournal3.undip.ac.id/index.php/jkm

Bukit, D. S., Keloko, A. B., & Ashar, T. (2021). Dukungan Tenaga Kesehatan dalam Pencegahan Stunting di Desa Tuntungan 2 Kabupaten Deli Serdang. *Tropical Public Health Journal*, *1*(2), 67–71. https://doi.org/10.32734/trophico.v1i2.7264

Dhefiana, T., Reni Suhelmi, & Hansen. (2023). Hubungan Penerapan Perilaku Hidup Bersih Dan Sehat (PHBS) Orang Tua Dengan Kejadian Stunting Di Kelurahan Air Hitam Kota Samarinda. *Sanitasi: Jurnal Kesehatan Lingkungan*, *16*(1). https://doi.org/10.29238/sanitasi.v16i1.1484

Dinkes. (2023). Target penilaian kinerja puskesmas 2023. *Dinas Kesehatan Provinsi Jawa Timur*.

Fairus, M., & Katharina, K. (20 C.E.). Faktor-Faktor Yang Berhubungan Dengan Kejadian. *Jurnal Kesehatan Metro Sai Wawai*, *5*(2), 89–94.

Handika, A., Rochmani, S., & Tangerang, S. Y. (2022). The Relationship Of Phbs And Exclusive Breast Milk With Stunting Events In Children In The Work Area Of Kedaung Barat Puskesmas Tangerang Regency 2021. *Nusantara Hasana Journal*, *2*(2), Page.

Herawati, H., Anwar, A., & Setyowati, D. L. (2020). Hubungan Sarana Sanitasi, Perilaku Penghuni, dan Kebiasaan Cuci Tangan Pakai Sabun (CTPS) oleh Ibu dengan Kejadian Pendek (Stunting) pada

Batita Usia 6-24 Bulan di Wilayah Kerja Puskesmas Harapan Baru, Samarinda. *Jurnal Kesehatan Lingkungan Indonesia*, *19*(1), 7. https://doi.org/10.14710/jkli.19.1.7-15

Ismy, N. A., & Wahyuni, M. (2019). Hubungan Perilaku Orang Tua dengan Kejadian Stunting Pada Balita di RT 08, 13, dan 14 Kelurahan Mesjid Kecamatan Samarinda Sebrang 2019. *Borneo Studies and Research*, *1*(1), 301–306. https://journals.umkt.ac.id/index.php/bsr/article/view/493

Kemenkes RI. (2022). Profil Kesehatan Indonesia 2021. In *Pusdatin.Kemenkes.go.id*.

Kementerian Kesehatan RI. (2017). *Penilaian Satus Gizi*.

Keswara, U. R., Wahyudi, D. A., & Sari, W. E. P. (2019). Pengetahuan, Sikap Dan Peran Tenaga Kesehatan Terhadap Penerapan Pola Hidup Bersih Dan Sehat (Phbs) Rumah Tangga. *Holistik Jurnal Kesehatan*, *13*(1), 37–47. https://doi.org/10.33024/hjk.v13i1.1128

Merina, N. D., Susanto, T., & Septiyono, E. A. (2021). Strategy to Reduce Stunting Children Through Exploration of Motherâ€™s Experience. *JI-KES (Jurnal Ilmu Kesehatan)*, *5*(1), 19–25. https://doi.org/10.33006/ji-kes.v5i1.226

Ramadhani, A. P., Susanto, T., Rasni, H., & Kurdi, F. (2023). Grand Parent of Parenting Style and Incidence of Stunting Among Toddlers in Indonesia: A Literature Review. *Jurnal Kesehatan Komunitas Indonesia*, *3*(1), 95–114. https://doi.org/10.58545/jkki.v3i1.48

Rasni, H., Susanto, T., Nur, K. R. M., & Anoegrajekti, N. (2019). Pengembangan budaya masak abereng dalam peningkatan status gizi balita stunting di Desa Glagahwero, Kecamatan Panti, Kabupaten Jember dengan pendekatan agronursing. *Journal of Community Empowerment for Health*, *1*(2), 121. https://doi.org/10.22146/jcoemph.42852

Sinaga, H., & Fidorova, Y. (2023). Penerapan Perilaku Hidup Bersih dan Sehat (PHBS) pada Siswa Siswi di Lingkungan SMA Pancur Batu Sumatra Utara Menggunakan Metode PRISMA. *PubHealth Jurnal Kesehatan Masyarakat*, *1*(4), 223–230. https://doi.org/10.56211/pubhealth.v1i4.243

Susanto, T., Rasni, H., & Susumaningrum, L. A. (2021). Prevalence of malnutrition and stunting among under-five children: A cross-sectional study family of quality of life in agricultural areas of Indonesia. *Mediterranean Journal of Nutrition and Metabolism*, *14*(2), 147–161. https://doi.org/10.3233/MNM-200492

Sutriyawan, A., Apriyani, R., & Miranda, T. G. (2021). The Relationship between Lifestyle and Hypertension Cases at UPT Cibiru Public Health Center Bandung City. *Disease Prevention and Public Health Journal*, *15*(1), 50. https://doi.org/10.12928/dpphj.v15i1.2456

Whindanahi, H., & Deviliawati, A. (2021). *Faktor-Faktor Yang Berhubungan Dengan Perilaku Hidup Puskesmas Nagaswidak Palembang Tahun 2019*. *13*(3), 84–90.

Yuwanti, Y., Mulyaningrum, F. M., & Susanti, M. M. (2021). Faktor – Faktor Yang Mempengaruhi Stunting Pada Balita Di Kabupaten Grobogan. *Jurnal Keperawatan Dan Kesehatan Masyarakat Cendekia Utama*, *10*(1), 74. https://doi.org/10.31596/jcu.v10i1.704

Zuhra, I., Samsul Alam, T., Program Studi Ilmu Keperawatan, M., Keperawatan Universitas Syiah Kuala Banda Aceh, F., & Keilmuan Keperawatan Komunitas, B. (2022). Gambaran Pengetahuan Ibu Rumah Tangga Tentang PHBS di Gampong Kuala Langsa. *JIM FKep*, *VI*(2), 106–114.