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Factors related to the implementation of the congenital hypothyroidism screening program in newborns at the Tugu Health Center, Trenggalek Regency

Farrah Khulus Fikriya [1,*], Dominicus Husada [2] and Euvanggelia Dwilda Ferdinandus [1]

[1] *Department of Midwifery, Faculty of Medicine, University of Airlangga, Surabaya, Indonesia.*
[2] *Department of Pediatrics, Dr Soetomo Hospital, Surabaya, Indonesia*

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Abstract

Background: Congenital Hypothyroidism is a disease caused by decreased or non-functioning thyroid gland that is present since birth. Delayed diagnosis and therapy can cause decreased intellectual function and quality. Therefore, screening is needed so that babies are detected immediately. The congenital hypothyroidism screening program has been carried out since 2023 throughout Indonesia. The government is currently continuing to increase screening coverage in all health facilities. Identification and analysis of factors related to program implementation need to be carried out to increase screening coverage. This study aims to analyze factors related to the implementation of the Congenital Hypothyroidism Screening program.

Method: This study uses an observational analytical method with a cross-sectional study approach. The sample size studied was 30 postpartum mothers who met the inclusion criteria. The sampling technique was total sampling. The instrument used was a questionnaire. The data obtained were analyzed using the fisher-exact test.

Results: The study showed that most respondents had a good level of knowledge regarding SHK (p = 0.532), most respondents had a negative attitude towards SHK (p = 0.602), most respondents had close access to health services (p = 1.000) and most respondents had BPJS Kesehatan (p = 0.004).

Conclusion: Factors that related to the implementation of the Congenital Hypothyroidism Screening program are ownership of BPJS Health.

Keywords: Congenital Hypothyroidism Screening; Newborn; Implementation

1. Introduction

Congenital Hypothyroidism (CH) is one of the diseases that is quite often found in infants. Congenital hypothyroidism is caused by a decrease or non-functioning thyroid gland that is present since birth. This occurs due to anatomical abnormalities or metabolic disorders of thyroid hormone formation or iodine deficiency [1]. Based on PMK No. 78 of 2014, more than 70% of infants diagnosed with congenital hypothyroidism after the age of 1 year have experienced permanent mental retardation. Delays in diagnosis and therapy cause a decrease in intellectual function and quality, thus impacting the quality of health and cognitive function [2].

The incidence of HK in worldwide is estimated to reach 1:3000. The incidence of congenital hypothyroidism in Indonesia in 2000-2013 was 73 cases out of 199,708 babies screened (1:2736). In 2022, the prevalence of HK in Indonesia reached

* Corresponding author: Farrah Khulus Fikriya

1:12,724 [3]. This ratio is higher when compared to the global ratio. Therefore, screening is needed for all newborns so that babies are immediately detected and can be given therapy [4].

Congenital Hypothyroidism Screening (CHS) is a screening test on newborns to sort out babies with congenital hypothyroidism from babies who do not suffer from it [1]. Screening is carried out on babies aged 48-72 hours. Hypothyroidism screening programs have been successfully carried out in several other countries in the world, such as China, Iran and Latin America. Congenital Hypothyroidism Screening is needed in every newborn to prevent symptoms from getting worse, so that if identified positive, therapy can be carried out immediately and it is hoped that they will have optimal growth and development. Congenital Hypothyroidism can be prevented if found and treated before the age of 1-2 months [5]. The congenital hypothyroidism screening program has been carried out since 2023 throughout Indonesia. Evaluation of this new program needs to be carried out from the start to detect inhibiting and driving factors. Until the end of 2023, not much data has been obtained regarding these factors.

The government is now continuing to increase screening for congenital hypothyroidism in newborns in all health facilities. In 2023, 1.2 million babies were recorded as being examined [6]. The CHS program in Trenggalek Regency began in July 2023. The coverage of CHS in Trenggalek is still low, which is around 54.31% which is carried out in 22 health centers. The implementation of screening at the Tugu Health Center has not yet been carried out as a whole with a screening coverage of only around 59.11%.

It is known that there are several factors that drive the success of programs in several countries, such as parental knowledge, government policies and screening strategies to detect congenital hypothyroidism. The screening process in Iran begins with educating pregnant women about the importance of hypothyroid screening for early detection within 3-5 days after birth. This stage is carried out face-to-face by health workers [7]. The government has an important role in the success of screening, namely by establishing CHS as a national health program. With a national program, all health facilities are required to carry out screening so that many babies are detected and can be treated immediately. This strategy is carried out by countries in Latin America that congenital hypothyroidism screening is set as a national regulation or regional NBS (New Born Screening) program. In addition, the implementation of new NBS legislation and increased involvement of government and public health authorities [8]. Active promotion by the government can also increase screening rates in the region as carried out by the Guangxi government, China [9].

Identification and analysis of factors related to program success can improve the program so that improvement efforts can be made if inhibiting factors are found and maintaining positive factors. Based on all of the above considerations, this study will examine factors related to the implementation of congenital hypothyroidism screening programs in newborns at the Tugu Health Center.

2. Material and methods

This study used an observational analytical method with a cross-sectional study approach. The study population was postpartum mothers at the Tugu Health Center in October - November 2024. Determination of respondents was based on inclusion and exclusion criteria. Inclusion criteria consisted of being willing to be respondents and postpartum mothers at the Tugu Health Center in October - November 2024. Exclusion criteria consisted of postpartum mothers or babies requiring referral, postpartum mothers who consumed antithyroid drugs during pregnancy and babies with severe congenital diseases. The number of samples was 30 respondents using the total sampling technique. The independent variables in this study were knowledge of CHS, attitudes towards CHS, access to health services and ownership of BPJS Kesehatan while the dependent variable was the implementation of the congenital hypothyroidism screening program. This study used primary data obtained from filling out questionnaires. Data analysis consisted of univariate and bivariate analysis. Univariate analysis explains each variable with frequency and percentage. Bivariate analysis to test the relationship between two variables uses the fisher-exact test. This research has obtained an ethical feasibility certificate from the health research ethics committee of the Faculty of Medicine, Airlangga University with number 134/EC/KEPK/FKUA/2024.

3. Results

3.1. Respondent characteristics

Table 1 Frequency distribution based on characteristics

Characteristics	f	%
Age		
<20 tahun	1	3.33
20-30 tahun	17	56.67
>30 tahun	12	40.00
Profession		
Housewife	21	70.00
Teacher	3	10.00
Employee	2	6.67
Entrepreneur	2	6.67
BUMD employees	1	3.33
PPPK	1	3.33
CHS Information		
Yes	21	70.00
No	9	30.00

Table 5.1 shows that the characteristics of the 30 samples studied were mostly aged 20-30 years, there are 17 people. Based on their occupation, most respondents were unemployed or housewives, there are 21 people. Most respondents had received information about congenital hypothyroidism screening from health workers and social media.

3.2. Univariate analysis

Table 2 Frequency distribution based on variables

Variables	f	%
Knowledge		
High	20	66.67
Moderate	7	23.33
Low	3	10.00
Attitude		
Positive	14	46.67
Negative	16	53.33
Access to health facilities		
Near	18	60.00
Far	12	40.00
BPJS Kesehatan Ownership		

Have	26	86.67
Don't have	4	13.33

Table 2 shows that most respondents have good knowledge about Congenital Hypothyroidism Screening, which is 20 people. Most respondents have a negative attitude about Congenital Hypothyroid Screening, which is 16 people. Most respondents' access to health facilities with close criteria is 18 people. Most respondents have BPJS health, which is 26 people.

3.3. Bivariate Analysis

Table 3 The relationship between knowledge level and implementation of congenital hypothyroidism screening

Knowledge of CHS	Implementation of CHS				Total		p-value
	Implemented		Not implemented				
	f	%	f	%	f	%	
High	18	90.00	2	10.00	20	100.00	0.532
Moderate	5	71.40	2	28.60	7	100.00	
Low	3	100.00	0	0.00	3	100.00	
Total	26	86.70	4	13.30	30	100.00	

Table 3 shows the results of statistical tests using the fisher exact test obtained a p-value = 0.532 (p > 0.01). This indicates that there is no relationship between the level of knowledge and the implementation of SHK in postpartum mothers at the Tugu Health Center.

Table 4 The relationship between attitude and implementation of congenital hypothyroidism screening

Attitude of CHS	Implementation of CHS				Total		p-value
	Implemented		Not implemented				
	f	%	f	%	f	%	
Positif	13	92.90	1	7.10	14	100.00	0.602
Negatif	13	81.30	3	18.80	16	100.00	
Total	26	86.70	4	3.30	30	100.00	

Table 4 shows the results of statistical tests using the fisher exact test obtained a p-value = 0.602 (p > 0.01). This indicates that there is no relationship between attitudes and the implementation of SHK in postpartum mothers at the Tugu Health Center.

Table 5 The relationship between access to health facilities and the implementation of congenital hypothyroidism screening

Access to health facilities	Implementation of CHS				Total		p-value
	Implemented		Not implemented				
	f	%	f	%	f	%	
Near	16	88.90	2	11.10	18	100.00	1.000
Far	10	83.30	2	16.70	12	100.00	
Total	26	86.70	4	13.30	30	100.00	

Table 5 shows the results of statistical tests using the Fisher exact test, the p-value is 1.000 (p> 0.01). This shows that there is no relationship between access to health facilities and the implementation of SHK in postpartum mothers at the Tugu Health Center.

Table 6 The relationship between BPJS Kesehatan ownership and the implementation of congenital hypothyroid screening

BPJS Kesehatan ownership	Implementation of CHS				Total		p-value
	Implemented		Not implemented				
	f	%	f	%	f	%	
Have	25	96.20	1	3.80	26	100.00	0.004
Don't have	1	25.00	3	75.00	4	100.00	
Total	26	86.70	4	13.30	30	100.00	

Table 6 shows the results of statistical tests using the Fisher exact test obtained a p-value = 0.004 (p < 0.01). This indicates a moderate relationship between BPJS health ownership and SHK implementation in postpartum mothers at the Tugu Health Center.

4. Discussion

4.1. Respondent characteristics

Respondent characteristics are mostly in the age range of 20 - 30 years (56.67%). In the Health Service Use theory, age is one of the predisposing factors that can influence individual behavior in utilizing health services [10]. In Siswoyo's study, it was stated that age has a significant relationship with the level of awareness of informal sector workers towards the JKN program in the DIY Province in 2015. Respondents aged 21-31 years have a low level of awareness and low knowledge of the JKN program. Conversely, respondents aged >32 years have a high level of awareness and high level of knowledge of the JKN program. This is influenced by the respondent's level of education [11]. So age can have an influence on the level of awareness and knowledge of the implementation of screening.

Efforts to increase public knowledge, awareness and willingness can be done by providing information through media channels and promotional techniques. The involvement of various parties in conducting socialization is one of the efforts to increase public awareness of health insurance [11]. Therefore, socialization or counseling is needed for the community to increase knowledge and attitudes so that a program or policy can run optimally. Providing information about CHS has been done by some midwives at the Tugu Health Center to postpartum mothers. This can increase the awareness and knowledge of mothers about CHS so that they are willing to do CHS.

Another characteristic of respondents in this study is employment status with the majority being housewives. Irawan and Ainy's research states that employment status is not related to the use of health services at the Payakabung Health Center. This is caused by the mindset and motivation of individuals who tend to change in undergoing treatment or health services [10].

4.2. The relationship between knowledge level and implementation of congenital hypothyroidism screening

The results of this study indicate that there is no relationship between the level of knowledge and the implementation of CHS in postpartum mothers at the Tugu Health Center. This is in line with the research of Hiola [5], that respondents with low knowledge and CHS implementation can be influenced by information factors. Respondents with low knowledge are caused by lack of information. However, respondents with low knowledge are not always low educated, increased knowledge is not only obtained from formal education, but can also be obtained from non-formal education.

Other studies also reveal that individual knowledge does not automatically cause changes in attitudes, but there are other factors that influence the level of individual knowledge such as support from family and the provision of socialization from health centers regarding the PIS-PK program. Knowledge is a very important domain in the formation of individual actions (overt behavior), in accepting new attitudes and behaviors individuals will go through stages of awareness, feeling interested, assessing and trying and adopting attitudes and behaviors that are based on knowledge, awareness and positive attitudes, then the behavior will be permanent [12].

According to Notoatmodjo, knowledge can form a belief so that individuals will behave according to that belief. Most respondents have high knowledge, this can determine attitudes in implementing screening [4]. Knowledge is influenced by various factors, including information. The high level of knowledge is because respondents have received previous information. The dissemination of information about CHS includes health promotion carried out by health workers and others.

Health promotion is a process related to changing individual behavior, changing lifestyles and creating an environment that supports healthy living [13]. Through health promotion, it is expected to form a health behavior, in this study is the implementation of screening in infants. Health behavior can be realized by developing policies, organizations or programs [13].

4.3. The relationship between attitude and implementation of congenital hypothyroidism screening

The results of this study indicate that there is no relationship between attitude and implementation of SHK in postpartum mothers at the Tugu Health Center. A person's attitude is closely related to the level of individual knowledge. A high level of knowledge will increase attitudes in a positive direction [14]. In the study of Deriyatno et al [4] it was stated that respondents with a high level of knowledge about CHS tend to have a positive attitude (do CHS). Conversely, respondents with a low level of knowledge about SHK tend to have a negative attitude (not do CHS). So it is necessary to increase respondents' knowledge about CHS in various ways such as holding seminars, training or workshops.

In the study by Ngasriyatun et al [15], it was stated that respondents with negative attitudes but had healthy behavior towards screening were influenced by the lack of understanding of respondents in capturing correct information so that respondents had a negative attitude towards CHS. This is in line with the results of this study, that most respondents had negative attitudes towards CHS but carried out CHS. Respondents with negative attitudes are related to the acceptance of information that has been obtained. In a study conducted by Sari et al [16], it was shown that respondents' attitudes were negative but tended to have good Covid-19 prevention behavior. This is influenced by respondents' experiences of Covid-19 prevention obtained from mass media and other communication media. According to Pakpour and Griffiths, individuals who participate in health behavior when they feel a severity or are susceptible to disease. It seems that mass media or other communication media can increase fear of Covid-19 which can then foster prevention behavior [16].

According to Azwar, individual attitudes are influenced by several factors, not only knowledge factors but there are several factors that influence it such as personal experience, the influence of others or culture in the environment [17]. In this study, the implementation of CHS at the Tugu Health Center was influenced by health workers. Health workers are required to screen newborns because of the CHS program policy. If the respondent uses BPJS Kesehatan at the time of delivery, the respondent is required to do CHS for their baby. Thus, respondents with positive or negative attitudes must still do CHS.

4.4. The relationship between acces to health facilities and the implementation of congenital hypothyroidism screening

The results of this study indicate that there is no relationship between access to health facilities and the implementation of CHS in postpartum mothers at the Tugu Health Center. Accessibility is influenced by several factors such as distance and geographic conditions. Based on the Indonesian National Standard (SNI) No. 03 - 1733 - 2004 concerning Procedures for Planning Urban Housing Environments, the standard for building health centers is set with a radius of 3.000 m2 (3 km) [18]. With the formation of this standard, it can be seen to what extent the health facilities of the health center can serve the community in the surrounding area [19]. In addition, geographic conditions such as poor road conditions can be an obstacle in the implementation of the SHK program [20].

This condition is in accordance with the research of Bregida et al [21] that there is a relationship between access and the interest in repeat visits of the community at the Sapala Health Center, Hulu Sungai Utara Regency in 2021. This is due to the difficulty of access to the health center which must use water transportation and wooden bridges with long distances, which affects the interest of the community in repeating visits to the health center. However, this is not in line with the results of this study, several respondents stated that access to health facilities is far from the geographical conditions in the hills but still carry out screening. Although access is difficult, it does not rule out the possibility that the CHS program is still carried out because village midwives or midwives at the Tugu Health Center make home visits (door to door) to take samples. In addition, respondents can also do CHS at the Independent Midwife Practice Place or TPMB.

4.5. The relationship between BPJS Kesehatan ownership and the implementation of congenital hypothyroidism screening

The results of this study indicate that there is a relationship between BPJS Kesehatan ownership and the implementation of CHS in postpartum mothers at the Tugu Health Center. The implementation of CHS in Indonesia is closely related to the Social Security Administering Agency or BPJS. Based on the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07 of 2023 concerning the implementation of the Regulation of the Minister of Health Number 3 of 2023 concerning health service tariff standards, that the financing of SHK sampling services by first level health facilities and advanced referral health facilities in collaboration with BPJS Kesehatan is included in the delivery tariff package so that health facilities that will make BPJS claims must have proof of CHS sampling.

This decision is effective from September 1, 2023 that health facilities are required to carry out CHS for newborns. Health facilities can only make claims for childbirth if accompanied by evidence of CHS sampling, so the active role of BPJS participants in this program is needed. For patients who refuse CHS examinations outside of the exceptions in KMK 1511 of 2023, they cannot exercise their rights with BPJS guarantees because the hospital cannot make claims for the childbirth to BPJS according to regulations [22].

The implementation of the congenital hypothyroidism screening program in Trenggalek Regency began in July 2023. Health facilities are required to carry out CHS for all newborns in mothers who have BPJS Kesehatan or who do not have BPJS Kesehatan. If they do not have BPJS Kesehatan, the budget for taking CHS samples will be borne by the government. If there are mothers who refuse to undergo CHS but have BPJS Kesehatan, the delivery fee will be charged to the mother and will not be covered by BPJS Kesehatan because health facilities cannot make claims without evidence of CHS samples.

In this study, respondents stated that they had not received SHK information from health workers or from their environment. The dissemination of information about SHK includes health promotion carried out by health workers or from other people. Through health promotion, it is expected to form a health behavior.

5. Conclusion

The results of this study indicate that:

- The level of knowledge is not related to the implementation of the CHS program at the Tugu Health Center, but there is a tendency, the higher the knowledge, the more successful the implementation of SHK.
- Attitude is not related to the implementation of the CHS program at the Tugu Health Center, but there is a tendency, the more positive the attitude, the more successful the implementation of CHS.
- Access to health facilities is not related to the implementation of the CHS program at the Tugu Health Center, but there is a tendency, the closer the access to health services, the more successful the implementation of CHS.
- Ownership of BPJS Kesehatan is related to the implementation of the CHS program at the Tugu Health Center.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The author declared no potential conflicts of interest.

Statement of ethical approval

This study was approved by the health research ethics commite of faculty of medicine, Airlangga University (134/EC/KEPK/FKUA/2024) on October 15th 2024

References

[1] Kemenkes. Congenital Hypothyroidism Screening Guidelines. Mranani F, editor. Jakarta: Kemenkes RI; 2014. 1–5 p.

[2] Pulungan AB, Soesanti F, Utari A, Pritayati N, Julia M, Annisa D, et al. Preliminary Study of Newborn Screening for Congenital Hypothyroidism and Congenital Adrenal Hyperplasia in Indonesia. eJurnal Kesehat Indones. 2020 Aug;8(2).

[3] Dumilah R, Yulifah R, Mansur H, Suprapti S, Darwanty J. Implementation of the Congenital Hypothyroidism Screening (CHS) Program: Literature Review. Journal of Health Research and Development Media [Internet]. 2023 Dec [cited 2024 Jul 14];33(4). Available from: https://jurnal.polkesban.ac.id/index.php/jmp2k/article/download/1810/919/9039#:~:text=Pada tahun 2022%2C prevalensi HK,dari seluruh bayi baru lahir.

[4] Deriyatno G, Sumarwati M, Alivian GN. Relationship between Educational Level, Knowledge and Maternal Attitudes towards Congenital Hypothyroidism Screening (CHS) at BKMIA Kartini Purwokerto. J Bionursing. 2019;1(1).

[5] Hiola FAA, Hilamuhu F, Katili DNO. Factors that Influence the Coverage of Congenital Hythyroidism Screening at RSU Prof. Dr. H. Aloe Saboe Gorontalo City. MPPKI [Internet]. 2022;5(4). Available from: https://doi.org/10.31934/mppki.v2i3

[6] Kemenkes. 1.2 Million Newborns Have Been Screened for Congenital Hypothyroidism [Internet]. Indonesian Ministry of Health. 2024 [cited 2024 Jul 24]. Available from: https://sehatnegeriku.kemkes.go.id/baca/umum/20240121/4744816/12-juta-bayi-baru-lahir-sudah-jalani-skrining-hipotiroid-kongenital/

[7] Yarahmadi S, Azhang N, Nikkhoo B, Rahmani K. A Success Story: Review of the Implementation and Achievements of the National Newborn Screening Program for Congenital Hypothyroidism in Iran. Int J Endocrinol Metab. 2020;18(2).

[8] Borrajo GJC. Newborn Screening in Latin America: A Brief Overview of the State of the Art. Am J Med Genet. 2021 Sep 1;187(3):322–8.

[9] Fan X, Chen S, Qian J, Sooranna S, Luo J, Li C, et al. Incidence and Interrelated Factors in Patients With Congenital Hypothyroidism as Detected by Newborn Screening in Guangxi, China. Glob Pediatr Heal. 2015 Jan 1;2.

[10] Irawan B, Ainy A. Analysis of Factors Associated with the Utilization of Health Services among National Health Insurance Participants in the Payakabung Community Health Center Working Area, Ogan Ilir Regency. Journal of Public Health Sciences [Internet]. 2018 Nov 5 [cited 2024 Dec 16];9(3):189–97. Available from: https://jikm.unsri.ac.id/index.php/jikm

[11] Siswoyo BE, Prabandari YS, Hendrartini Y. Awareness of Informal Sector Workers towards the National Health Insurance Program in Yogyakarta Special Region Province. J Indonesian Health Policy [Internet]. 2015 Dec [cited 2024 Dec 16];04(4). Available from: https://jurnal.ugm.ac.id/jkki/article/view/36116

[12] Putra ID, Hasana U. Analysis of the Relationship between Family Attitudes and Knowledge and the Implementation of the Healthy Indonesia Program with a Family Approach. J Endur [Internet]. 2020 Feb 29 [cited 2024 Dec 2];5(1):13. Available from: https://www.researchgate.net/publication/341707263_Analisis_Hubungan_Sikap_dan_Pengetahuan_Keluarga_dengan_Penerapan_Program_Indonesia_Sehat_dengan_Pendekatan_Keluarga/fulltext/5ecfbc4c92851c9c5e655468/Analisis-Hubungan-Sikap-dan-Pengetahuan-Keluarga-dengan-Penerapan-Program-Indonesia-Sehat-dengan-Pendekatan-Keluarga.pdf

[13] Gibbs CM, Wendt A, Peters S, Hogue CJ. The Impact of Early Age at First Childbirth on Maternal and Infant Health. Paediatr Perinat Epidemiol. 2012 Jul;26(SUPPL. 1):259–84.

[14] Al-Harbi A, Alsaid L, Parameaswari P. Primary School Female Teachers' Knowledge, Attitude, and Practice toward Students with Epilepsy in Riyadh, Saudi Arabia. J Fam Med Prim Care [Internet]. 2018 [cited 2025 Jan 3];7(2):331. Available from: https://pubmed.ncbi.nlm.nih.gov/30090773/

[15] Ngasriyatun, Fitriah, Nggraeni S, Handayani A. Predisposing Factors of Postpartum Mothers Associated with Congenital Hypothyroidism Screening (CHS) Behavior at the Pungpungan Community Health Center, Bojonegoro Regency. Echo of Indonesian Midwives [Internet]. 2023 Jun 30 [cited 2024 Dec 16];12(2):63–8. Available from: https://r.search.yahoo.com/_ylt=AwrPrHS9RmBn_wEA1NrLQwx.;_ylu=Y29sbwNzZzMEcG9zAzMEdnRpZAMEc2VjA3Ny/RV=2/RE=1735572413/RO=10/RU=https%3A%2F%2Fgebindo.poltekkesdepkes-sby.ac.id%2Findex.php%2Fgebindo%2Farticle%2Fdownload%2F120%2F77/RK=2/RS=B896r9j1FYLBNkU1IpsvIQuJb9w-

[16] Sari AR, Rahman F, Wulandari A, Pujianti N, Laily N, Anhar VY, et al. Covid-19 Prevention Behavior Seen from Individual Characteristics and Community Attitudes. J Indonesian Community Health Researcher and Developer [Internet]. 2020 Jul;(1). Available from: https://journal.unnes.ac.id/sju/index.php/jppkmiURL:https://journal.unnes.ac.id/sju/index.php/jppkmi/article/view/41428/173

[17] Fuadi FI. The Relationship between Knowledge and Community Attitudes in Preventing Leptospirosis in Pabelan Village, Kartasura District, Sukoharjo Regency. [Surakarta]: Muhammadiyah University of Surakarta; 2016.

[18] National Standardization Agency. Procedures for Planning Housing Environments in Urban Areas. 2019.

[19] Rahmi I, Suasti Y, Purwaningsih E. Utilization and Scope of Health Services at Tanjung Pati Community Health Center, Harau District, Limapuluh Kota Regency. J Buana. 2019;(2).

[20] Anggraini C, Sarwo YB, Sulistyanto H. The Role of Community Health Centers in Implementing Congenital Hypothyroidism Screening to Ensure Children's Health at Oku Timur Community Health Center. J Huk Kesehat [Internet]. 2018 Jun;4(1). Available from: http://journal.unika.ac.id/index.php/shk

[21] Bregida N, Anwary AZ, Anggraeni S. The Relationship between Access and Services and Community Revisit Interest at the Sapala Community Health Center, Hulu Sungai Utara Regency in 2021. 2021 Feb [cited 2024 Dec 2]; Available from: https://eprints.uniska-bjm.ac.id/8050/

[22] RSU Rajawali Citra. Implementation of the Congenital Hypothyroidism Screening (CHS) Program at RSU Rajawali Citra Bantul [Internet]. RSU RC Bantul. 2023 [cited 2024 Dec 2]. Available from: https://rsrcjogja.com/view/lihatArtikelDetail?id=10