

RESEARCH ARTICLE

Knowledge of pregnant women about risk factor of cleft lip and palate at Puskesmas Mutiara, Asahan, Indonesia

Hendry Rusdy*✉, Rahmi Syaflida*, Olivia Avriyanti Hanafiah*, Jemima Ratnaningtyas**

*Departement of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Sumatera Utara, North Sumatra, Indonesia

**Faculty of Dentistry, Universitas Sumatera Utara, North Sumatra, Indonesia

*Jl Alumni No 2 Kampus USU Medan, North Sumatra, Indonesia; ✉ correspondence: hendry_rusdy@yahoo.co.id

Submitted: 21st December 2021; Revised: 31st October 2022; Accepted: 22nd November 2022

ABSTRACT

Cleft is a congenital abnormal space or gap in the upper lip, alveolus, or palate. This congenital abnormality occurs between the 5th and 10th weeks of pregnancy. Clefts are divided into cleft lip, cleft palate, as well as cleft lip and palate. Cleft lip and palate are caused by the interaction of individual genes with certain environmental factors. Mothers' knowledge about risk factor of cleft lip and palate may promote better health-related behavior in their pregnancy by increasing the understanding about the risk factor. Unfortunately, until now there is still limited data about this. The purpose of this study was to determine the knowledge of pregnant women about risk factor of cleft lip and palate. This was a descriptive study that used the survey method. This study was conducted using a questionnaire distributed to 67 pregnant women (n = 67). The questionnaire consisted of 13 validated questions. The results of this study found that 10.4% of the respondents had good knowledge, 32.8% of the respondents had moderate knowledge and 56.7% of the respondents had poor knowledge. The overall knowledge of the pregnant women about risk factor of cleft lip and palate at Puskesmas Mutiara Asahan fell in the low category.

Keywords: cleft lip and palate; knowledge; pregnant women; risk factors

INTRODUCTION

A cleft is a congenital abnormal space or gap in the upper lip, alveolus, or palate. This congenital abnormality is caused by a mutation in a gene during embryonic development and occurs between the fifth and tenth weeks of fetal life. The occurrence of oral clefts in the United States has been estimated as 1 in 700 births. Clefts occur less frequently in black but more common in Asians.¹ Based on the 2013 Basic Health Research (RISKESDAS), the prevalence of children aged 24-59 months who had a tendency to have disabilities reached 0.53%, of which 0.08% were occupied by children with cleft lip and palate.² According to the 2018 Basic Health Research, the prevalence of cleft lip and palate in children aged 24-59 months was 0.12%.³ Based on the 2007 Basic Health Research, Nanggroe Aceh Darussalam, North Sumatra, South Sumatra, Bangka Belitung, Riau Islands, DKI Jakarta, and West Nusa Tenggara had cleft lip prevalence

above the national prevalence. North Sumatra had 0.7% cleft lip prevalence.⁴

Cleft lip and palate might affect facial appearance, dental condition, as well as respiratory and digestive function.⁵ One of the first manifestations associated with cleft palate is difficulty with feeding. Speech is often characterized by air emission from the nose and hypernasality. Patients with cleft lip usually have cosmetic problems and problems for production of labial sounds. Sounds most frequently misarticulated include /s/, /z/, /d/, /ch/, /p/, and /b/.⁶

The exact cause of cleft is unknown in most cases. The majority of clefts appear to be caused by an interaction between the individual's genes and certain factors in the environment that may or may not be specifically identified. Environmental factors seem to play a contributory role at the critical time of embryologic development, when the lip and palatal halves are fusing.¹ Several

factors can be involved in cleft lip and palate predispositions such as geographical factors, race, family history, gender, exposure to pregnancy risk factors, such as alcohol consumption and smoking, poor nutrition, viral infections, drugs and teratogens in the work environment and home.⁷ A study carried out by Angulo-Castro major showed that maternal risk factors associated with the development of cleft lip and cleft palate were lack of folic acid intake and multivitamin supplements during pregnancy, in addition to smoking and alcohol consumption during pregnancy.⁸ Jamilian et al reported that Family history of clefts, folic acid consumption, and consanguineous marriage were quite strongly associated with increased risk of cleft lip and palate.⁹

Based on research conducted by Owotade et al in 200 pregnant women who visited the antenatal clinic half of the women (50.5%) had seen or heard of cleft lip and palate. As many as 19.8% were able to correctly identify cleft lip as a lip defect. The average cumulative knowledge score was 6.9 ± 2.3 , 19.8% had adequate knowledge. Many respondents had neither read articles about cleft lip and palate nor participated in community outreach programs, and 32.3% stated that they would like to know more about cleft lip and palate conditions.¹⁰ Research conducted by Alnujaim et al. showed that 81% of the respondents had heard of cleft lip, 49.4% had heard of cleft palate, and 63.2% had seen someone with cleft lip and palate. Based on this study, the majority of the participants were not aware that a previous family history of cleft lip and palate was a risk factor for cleft lip and palate.¹¹ Another study conducted by Soeselo et al. in Serang, Banten showed that 96.2% (25 people) had a low level of knowledge of cleft lip and palate; 69.2% (18 people) had a good attitude towards cleft lip and palate because they sought medical help to treat their children. This study showed that knowledge about cleft lip and palate in parents was low. This was assessed using several questions regarding the type of cleft, the cause, and the best time to have surgery done.¹²

Cleft lip and palate may have a major impact on facial appearance; eating, speech, and dental

conditions; as well as respiratory and digestive functions. The risk factor for cleft lip and palate is a combination of genetic factors and environmental factors that are closely related to the condition of the mother during pregnancy. It is important for parents, especially those who have a family history of cleft lip and palate, to know the risk factors that can cause this condition. Improving knowledge about risk factors and potential risk factors that cause cleft lip and palate can be very useful as a preventive measure. This can eventually decrease cleft lip and palate incidence and improve local health systems. On the other hand, lack of information and lack of knowledge can have a major impact on the incidence of cleft lip and palate.⁷ Mothers' knowledge about risk factor of cleft lip and palate may promote better health-related behavior in their pregnancy by increasing the understanding about the risk factor. Unfortunately, until now there is still limited data about this. The purpose of this study was to describe the knowledge of pregnant women about the risk factors for cleft lip and palate at Puskesmas Mutiara Asahan.

MATERIALS AND METHODS

This was a descriptive survey research that aimed to describe the knowledge level of pregnant women about the risk factors for cleft lip and palate. This research was conducted at Puskesmas Mutiara Asahan, North Sumatra, Indonesia from May 2021 to July 2021. This kind of study had never been conducted in this area. The population of this study consisted of pregnant women at Puskesmas Mutiara Asahan. The samples were selected using random sampling, resulting in 67 samples, including the possibility of the drop out rate. The samples were randomly selected among the pregnant women at Puskesmas Mutiara Asahan according to the predetermined inclusion and exclusion criteria. The inclusion criterion for this study was pregnant women who completed the questionnaire; the exclusion criterion was pregnant women who did not complete the questionnaire during the study.

The questionnaire consisted of 13 questions related to the risk factors for cleft lip and palate which had been tested for validity and reliability. The respondents filled in the questionnaire themselves. The data analysis used in this research was univariate analysis. The questions with correct answers scored 1, while those with incorrect answers scored 0. Therefore, the highest score of 13 could be obtained from a total of 13 questions. Then, the knowledge score was categorized into good, moderate, and poor categories. The knowledge category was considered good if the correct answer was between 76% - 100% of all the questions; the knowledge category was moderate if the correct answer was between 56% - 65% of all the questions; the knowledge category was poor if the correct answer was < 56% of all the questions. This investigation was approved by the Health Research Ethics Committee of Universitas Sumatera Utara with Registry Number 587/KEP USU/2021.

RESULTS

A total number of 67 pregnant women were involved as the research respondents. In this study, the questionnaire on knowledge about risk factor for cleft lip and palate consisted of 13 questions. The accumulation of the respondents' answers for each question can be seen in the following table (Table 1).

Based on Table 1, most of the respondents (56 respondents or 83.6%) answered correctly to questions about cleft lip and palate, while 11 respondents (16.4%) answered incorrectly. In terms of the question about the incidence of cleft lip which is more common in male infants, 49 people (73.1%) answered incorrectly, while 18 of them (26.9%) answered correctly. For the question about the incidence of cleft lip that is always followed by cleft palate, the majority of the respondents, namely 43 respondents (64.2%), answered incorrectly, while 24 of them (35.8%) answered correctly. On the question about the occurrence of cleft lip in children that is only influenced by family history, 45 respondents (67.2%) answered correctly, while 22 respondents (32.8%) answered

incorrectly. In terms of the question about cleft lip and palate that will lead to further growth and development problems, such as breathing, swallowing, and speaking disorders, the majority of the respondents (92.5) answered correctly, but 5 respondents (7.5%) answered incorrectly. On the question about maternal age that is related to the incidence of cleft lip, 32 respondents (47.8%) answered correctly, while 35 respondents (47.8%) answered incorrectly. The next question was: after having a child with a cleft lip, there is a risk of a second child with a cleft lip. Regarding this question, the majority of the respondents (58 people or 86.6%) answered incorrectly, while 9 respondents (13.4%) answered correctly. For the question about drug consumption as one of the causes of cleft lip, the majority of the respondents (35 people or 52.2%) answered correctly, while 32 respondents answered incorrectly (47.8%).

On the question about maternal nutrition that is related to incidence of cleft lip, 21 respondents (31.3%) answered correctly and 46 respondents answered incorrectly (68.7%). Based on Table 1, for the question about folic acid intake to reduce the risk of cleft lip and palate, the 47 respondents (70.1%) answered correctly, while 20 respondents answered incorrectly (29.9%). Regarding the question about antenatal care that helps prevent pregnancy disorders, 49 respondents (73.1%) answered correctly, while 18 of them (26.9%) answered incorrectly. The next question was: exposure to secondhand smoke during pregnancy (passive smoking) is not associated with the incidence of cleft lip and palate. On this question, the majority of the respondents (58.2%) answered incorrectly, while 28 respondents answered correctly (41.8%). For the question about consanguinity marriage that can increase the incidence of cleft lip and palate, 47 respondents (70.1%) answered incorrectly, while 20 respondents answered correctly (29.9%). Based on the accumulation of the respondents' answers on the questionnaire on knowledge about risk factor of cleft lip and palate, the respondents' categories of knowledge can be seen in the following table (Table 2).

Table 1. Frequency distribution of respondents' answers on the knowledge questionnaire sheet about risk factor of cleft lip and palate

Question	Right		Wrong		Correct answer
	n	%	n	%	
Cleft is a birth defect in which an abnormal opening or splitting of the lip or palate	56	83.6	11	16.4	Cleft is a birth defect in which an abnormal opening or splitting of the lip or palate
Cleft lip is more common in male babies	18	26.9	49	73.1	Male children have a 3.5-fold greater chance of being born with clefts compared with females
Cleft lip is always followed by cleft palate	24	35.8	43	64.2	Clefts can occur with only cleft lip, cleft lip with or without cleft palate, and cleft palate only.
The possibility of the occurrence of cleft lip in children is only influenced by family history	45	67.2	22	32.8	The possibility of the occurrence of cleft lip in children is not only influenced by family history
Cleft lip and palate will cause problem for further growth and development, such as breathing, swallowing and speaking disorders	62	92.5	5	7.5	Cleft lip and palate will cause problem for further growth and development, such as breathing, swallowing and speaking disorders
Maternal age has no effect on the incidence of cleft lip	32	47.8	35	52.2	Maternal age has effect on the incidence of cleft lip
After having a child with a cleft lip, there is a risk of a second child with a cleft lip	9	13.4	58	86.6	After having a child with a cleft lip, there is a risk of a second child with a cleft lip
Consumption of drugs without a doctor's instructions is one of the causes of cleft lip	35	52.2	32	47.8	Consumption of drugs without a doctor's instructions is one of the causes of cleft lip
Maternal nutrition such as folic acid, vitamin B12, vitamin A, zinc, and calcium during pregnancy affect the incidence of cleft lip	21	31.3	46	68.7	Maternal nutrition such as folic acid, vitamin B12, vitamin A, zinc, and calcium during pregnancy affect the incidence of cleft lip
Folic acid supplements intake one month before pregnancy and early pregnancy can reduce the risk of cleft lip in babies	47	70.1	20	29.9	Folic acid supplements intake one month before pregnancy and early pregnancy can reduce the risk of cleft lip in babies
Routine antenatal care helps the mother in preventing pregnancy disorders	49	73.1	18	26.9	Routine antenatal care helps the mother in preventing pregnancy disorders
Exposure to cigarette smoke during pregnancy (passive smoking) is not associated with the incidence of cleft lip and palate	28	41.8	39	58.2	Exposure to cigarette smoke during pregnancy (passive smoking) is associated with the incidence of cleft lip and palate
Consanguinity marriage can increase the incidence of cleft lip	20	29.9	47	70.1	Consanguinity marriage can increase the incidence of cleft lip

DISCUSSION

In the present study, we assessed the knowledge of pregnant women about cleft lip and palate. The questions asked in the questionnaire in this study are listed in Table 1. A self-administered questionnaire was used to get information from the respondents. The questionnaire consisted of 5 questions about etiology, 3 questions about the prevalence of cleft lip and palate, 1 question about cleft definition,

1 question about gender tendencies, 1 question about comorbidities and prevalence, 1 question about cleft clinical outcomes, and 1 question about maternal behavior. Our current study is consistent with the results of a study by Alnujaim et al., where most of the respondents (41.9%) agreed that cleft lip and palate is a congenital facial deformity and opening of the lip and hard palate. The present study showed that the majority of the respondents

Table 2. Respondents' categories of knowledge about risk factor of cleft lip and palate

Knowledge Category	Frequency	Percentage
Good	7	10.4
Moderate	22	32.8
Poor	38	56.7
Total	67	100

(83.6%) correctly answered the question about cleft lip and palate.

Cleft lip with cleft palate and cleft lip occur in male approximately twice as often as in female, whereas cleft palate (without cleft lip) occurs slightly more often in female.¹ Baby boys have a 3.5-fold greater chance of being born with clefts compared with baby girls.¹³ So far, there is no generally accepted explanation for these gender differences, but these differences may possibly be explained by the differences in the craniofacial development between female and male embryos. Clefts in females mainly occur in the late embryonic period, mostly in the form of clefts of the secondary palate only and are usually the result of a fusion defect. Compared to females, clefts in males more commonly occur in both the early and late embryonic periods, more often in the form of clefts of both the primary and secondary palate and are more frequently the result of differentiation defects as well as the combination of fusion and differentiation defects.¹⁴ In the present study, there were 18 respondents (26.9%) who knew and answered correctly that cleft lip was more common in male. This may be due to the respondents' education and socioeconomic level.

Clefts can be in the form of cleft lip alone, cleft lip with or without cleft palate, and cleft palate alone. Out of 67 respondents, 24 respondents (35.8%) stated that the incidence of cleft lip is not always followed by cleft palate. The result is in contrast to a previous study by Alnujaim et al. which showed that the majority of the respondents stated that cleft lip and palate did not always occur together.¹¹ The difference between the results of this study and those from the previous study may be due to the fact that the respondents had different educational levels.

Family history is one of the genetic factors that can increase the occurrence of cleft lip and palate. During secondary palate formation, the palatal shelves grow, approach, and fuse. The cells need to activate a series of biological mechanisms, including cell migration, epithelial–mesenchymal transition, and apoptosis, necessary to remove epithelial cells from the palatal medial edge epithelium, leading to the continuity of the mesenchyme and to palatal formation. For this reason, it has been hypothesized that many genes that code for proteins involved in the formation of cytoskeleton filaments, for cell adhesion molecules, or for ECM components, may contribute, if altered, to the cleft palate phenotype.¹⁵ Jamilian et al conducted a study with a sample of 187 people with the aim to understand the relationship between parental risk factors and the incidence of cleft lip and palate. The results revealed that the risk factors involved when considering the family history variable had an odds ratio of 7.4 with a 95% confidence interval. This shows that the incidence of cleft lip and palate significantly increased in parents with a history of cleft lip and palate.⁹ Aside from genetic factors, the etiology of cleft lip and palate has several modifiable factors, which act from one month before until two months after conception. Maternal factors during pregnancy such as health status, lifestyle, and drugs consumption can affect the intrauterine environment, especially during embryonic development, and several studies have investigated its association with the risk of cleft lip and palate.¹⁵ This study showed that 45 pregnant women (67.2%) knew that the possibility of cleft lip and palate is not only due to family history. This is comparable to the results of the respondents'

answers to other questions that discuss other risk factors as the cause of cleft lip and palate.

Cleft lip and palate can lead to some related problems such as speech disorders, hearing problems and ear infection, feeding and nutritional problem, dental problems, and psychological problems. Patients with a cleft palate have speech problems which result from velopharyngeal dysfunction. Inability of soft palate to move upward to provide a contact with nasal cavity results in a passing of air through the nose instead of oral cavity. This condition is known as hypernasality speech. Patients with cleft can also have some problems with ear infection. Otitis media is a condition where a fluid is accumulated in the middle ear and results in ear infection. This is due to the abnormal action of Eustachian tube opening by two muscles, namely tensor veli palatini and levator veli palatini muscles. This leads to a lack of ventilation to the middle ear cavity and accumulation of fluid inside the middle ear. This condition is present in a child with cleft palate in the first six months of life. The other problems, such as dental problems, involve abnormalities in the size and shape of the teeth. For example, the permanent lateral incisor has abnormal size and shape in the side of cleft, abnormal tooth position, delayed eruption of permanent teeth, and delayed formation of permanent teeth. Feeding problems in babies with cleft lip and palate occur because babies are incapable of sucking when breastfed or bottle-fed. Therefore, this affects the weight and growth of the baby because the amount of milk or food is not adequate for growth. There are a variety of methods that enable the baby to feed and gain a normal weight such as the use of disposable syringe, spoon, cup, and obturator prosthesis. All the above-mentioned problems impair the psychology of patients with cleft lip and patient where they suffer from depression, anxiety, and lack of self-esteem; they are also incapable of communicating with their peers in the school. Furthermore, some patients become anxious due to other people's reactions and worried about meeting people in social events.¹⁶ In this study, the majority of the respondents (92.5%) correctly

answered the question that cleft lip and palate will cause further growth and development disorders.

On the question whether there is an effect of maternal age with the incidence of cleft lip and palate, 32 respondents (47.8%) answered correctly. Based on a study conducted by Herkrath et al, fathers and mothers aged ≥ 40 years had a higher tendency to have offspring with a cleft lip with or without cleft palate. Possible explanations for our findings may be related to cumulative changes in gametes through lifetime as a result of environmental exposures or chromosomal alterations. Other potential factors, for women, include the ageing process that causes the uterus to become less selective to defective embryos and the placenta of older women become more permeable to teratogenic agents. Other factors that must also be considered are drug consumption throughout life, the prevalence of chronic diseases in older people, socioeconomic characteristics, as well as access and quality of health care.¹⁷ A possible explanation for increased odds of cleft lip and palate in younger mother might be because of the lack of supplementation and frequent pregnancy unawareness.¹⁸

Family history is considered as one of the causes that can lead to cleft lip and palate. The risk of cleft lip and palate in children whose parents had cleft lip and palate was 9%.¹⁶ When the first child had cleft lip, the risk of the second child to have cleft lip was about 2-5%; after two children were affected, the risk increased to 9-12%.¹⁹ There were 9 pregnant women (13.4%) who correctly answered the question that, when the first child has a cleft lip, there is a risk of the second child with a cleft lip.

Epidemiological studies have shown that maternal drug use at high doses during pregnancy increases the risk of giving birth to infants with cleft lip and palate. Maternal use of vasoactive drugs, such as aspirin and ibuprofen; antiepileptic drugs; and drugs used in the treatment of acne, psoriasis, arthritis, and cancer increase the risk of cleft lip and palate at birth.²⁰ Cleft lip and palate can also result from some medications such as corticosteroids in which some pregnant women take due to insomnia

and anxiety. In addition, retinoids are considered as one of the main reasons that cause clefts in infants when taken during pregnancy.¹⁶ On the questions related to drugs consumptions during pregnancy, more than half (52.2%) of the respondents answered correctly. Factors such as diet including folic acid, vitamins, zinc, and other microelements have a significant effect on pregnancy.⁷

Since the nutritional status of the embryo is fully dependent on maternal food intake and metabolism, unbalanced maternal nutrition during the first trimester of pregnancy can lead to birth defects. Several essential micronutrients and substances that cannot be synthesized by our body in sufficient amount are needed for health maintenance, pregnancy progression, and normal embryonic development.¹⁵ Furthering our knowledge regarding the role of nutrition in the pathogenesis of cleft lip and palate is important for the prevention of cleft lip and palate in the future.²⁰ Based on the results of this study, 21 respondents (31.3%) knew that maternal nutrition during pregnancy is associated with the risk of cleft lip and palate.

The majority of the pregnant women (70.1%) knew that the use of folic acid supplements can reduce the risk of cleft lip and palate. A study found that a reduced risk of cleft lip and palate was more common in mothers that took multivitamins containing folic acid during the period from one month before until two months after conception. Women taking multivitamins containing folic acid periconceptionally had a 25-50% reduction in risk for offspring with cleft lip and palate compared to women who did not take such vitamins. folic acid supplements during early pregnancy (400 microgram per day) seem to reduce the risk of isolated cleft lip (with or without cleft palate) by about one third.⁷ The majority of the pregnant women (73.1%) correctly answered the question about routine antenatal care during pregnancy that can help mothers in preventing pregnancy disorders.

In addition, out of 67 respondents, 28 people (41.8) correctly answered the question on whether cigarettes exposure during pregnancy is related to the incidence of cleft lip and palate. Maternal exposure to passive smoking has been

hypothesized to interact with genetic factors, causing birth defects and associated with a 14% increased risk of clefts.²¹ Secondhand smoke could have a more potent adverse effect on infants in a domestic environment as pregnant women and nursing mothers might be unaware of its importance as a risk factor.²²

Consanguineous marriage is considered as a risk factor for cleft lip and palate.^{23,24} Genetically, a union between two individuals with close biological ancestors results in expression of autosomal recessive genes which are associated with many congenital anomalies such as cleft lip and palate.²⁵ A study has discussed the relation between consanguinity and genetics and has concluded that in populations where consanguineous marriage is widely practiced, recessive genetic disorders will continue to gain greater prominence in the overall spectrum of ill health.²⁵ The results of the study showed that 20 respondents (29.9%) correctly answered the question about consanguineous marriage that can increase the incidence of cleft lip and palate. This result is consistent with a study conducted by Alnujaim et al which showed that only 12.9% of the respondents agreed that consanguineous marriage was a risk factor for cleft lip and palate.¹¹

The majority of the respondents (56.7%) had a poor level of knowledge, (10.4%) of the respondents had a good level of knowledge, and (32.8%) of the respondents had a moderate level of knowledge. The result is consistent with Owotade et al in which only 19.8% of the questioned pregnant Nigerian females had adequate knowledge.¹⁰ A study carried out by Soeselo et al. in Serang, Banten showed that the majority of the respondents (96.2%) had inadequate knowledge about cleft lip and palate.¹² On the other hand, Alnujaim et al. showed that 52.5% Saudi pregnant women had a good level of knowledge.¹¹ The results of the research at Puskesmas Mutiara Asahan were different from one of the previous studies. This may be due to the fact that the respondents had different education levels.

Knowledge can be influenced by several factors such as age, education, occupation, and

experience.²⁶ Differences in age and education level of respondents cause different knowledge results. Age is related to one's knowledge because it brings changes to the physical and psychological aspects. The older the person, the better the knowledge. There is a relationship between the level of education and the level of knowledge because the higher the education level, the more the information and knowledge gained. On the other hand, a low level of education will obstruct the development of a person because s/he finds it difficult to receive new information and values. In addition, the work environment can also affect knowledge and experience both directly and indirectly.

Experience as a source of knowledge is a way to reveal the truth by repeating the knowledge that has been obtained. People who have previous experiences tend to have better knowledge. Meanwhile, a person's economic status can determine the availability of facilities to obtain information, so economic status can also affect one's knowledge. Low socioeconomic status is also associated with the risk of cleft lip and palate.²⁷

The limitations of this study include the use of closed-ended questions so the respondents were only able to choose from the available responses. In this study, the respondents only chose either correct or incorrect answers, making it difficult to explore the respondents' explanations for their answers in depth. The topics of the questions were also too difficult for the respondents. Less difficult questions with simpler language that the respondents are more familiar with should be used. Future studies should examine the causes of low prenatal awareness as well as the relation between maternal health behavior and the prevalence of cleft lip and palate.

CONCLUSION

In conclusion, the majority of the pregnant women (56.7%) had a poor category of knowledge about risk factor of cleft lip and palate, 32.8% of the respondents had a moderate category of knowledge, while 10.4% of the respondents had a good category of knowledge. The respondents

who were in the good category of knowledge (76% - 100%) had knowledge about cleft lip and palate as well as about growth and development disorders related to cleft lip and palate. The respondents in the moderate category (56% - 75%) had knowledge about the possibility that cleft lip and palate is influenced by family history, pregnant women's nutrition which affects cleft lip and palate, and routine antenatal care as a preventive measure for pregnancy disorders. The respondents who were in the poor category (< 56%) had knowledge about the incidence of cleft lip which is more frequent in male, whether the incidence of cleft lip is always followed by cleft palate, and risk factors for cleft lip and palate including the maternal age, the risk of having a second child with cleft lip, drugs consumption, maternal nutrition during pregnancy, exposure to secondhand smoke, and consanguineous marriage.

ACKNOWLEDGMENT

The authors would like to thank Puskesmas Mutiara Asahan for their limitless assistance and support.

REFERENCES

1. Hupp JR, Ellis E TM. Contemporary Oral and Maxillofacial Surgery. 7th ed. Philadelphia: Elsevier Inc; 2019. 608 – 611.
2. Badan Penelitian dan Pengembangan Kementerian Kesehatan RI. Laporan Nasional Riset Kesehatan Dasar. Jakarta; 2013.
3. Badan Penelitian dan Pengembangan Kementerian Kesehatan RI. Laporan Nasional Riset Kesehatan Dasar. Jakarta; 2018.
4. Badan Penelitian dan Pengembangan Kementerian Kesehatan RI. Laporan Nasional Riset Kesehatan Dasar. Jakarta; 2007.
5. Putri FM, Mariam MS, Emma R, Maskoen AM. Penyuluhan mengenai penyebab kelainan celah bibir dan langit-langit. Jurnal Pengabdian kepada Masyarakat. 2019; 4(2): 31–32.
6. Bhat N, Thakur K, Bhardwaj N, Nandan H, Rawat A, Lathwal A. Cleft lip and palate: a

- review. *Ann Med Health Sci Res.* 2020; 10: 927–930.
7. Kawalec A, Nelke K, Pawlas K, Gerber H. Risk factors involved in orofacial cleft predisposition – review. *Open Med (Wars).* 2015; 10(1): 163–175. doi: 10.1515/med-2015-0027
 8. Angulo-castro E, Acosta-alfaro LF, Guadron-Illanos AM, Canizalez-román A, Gonzalez-ibarra F, Osuna-ramírez I, Murillo-Llanes J. Maternal risk factors associated with the development of cleft lip and cleft palate in Mexico: a case-control study. *Iran J Otorhinolaryngol.* 2017; 29(93): 189–195.
 9. Jamilian A, Sarkarat F, Jafari M, Neshandar M, Amini E, Khosravi S, Ghassemi A. Family history and risk factors for cleft lip and palate patients and their associated anomalies. *Stomatologija.* 2017; 19(3): 78–83.
 10. Owotade FJ, Ogundipe OK, Ugboko VI, Okoje VN, Olasoji HO, Makinde ON, et al. Awareness, knowledge and attitude on cleft lip and palate among antenatal clinic attendees of tertiary hospitals in Nigeria. *Niger J Clin Pract.* 2014; 17(1): 6–9. doi: 10.4103/1119-3077.122822
 11. Alnujaim NH, Albedaiye ES, Alyahya LS, Adosary MA, Alotaibi FF, Alnujaim MH, et al. Awareness, knowledge and attitudes of Saudi pregnant women towards cleft lip and palate. *Current Pediatric Research.* 2017; 21(4): 595–603.
 12. Soeselo DA, Suparman AAS, Budi AS. Parents' knowledge, attitude and behaviour toward cleft lips and cleft palate in Kencana Hospital, Serang, Banten. *J Craniofac Surg.* 2019; 30(4): 1105–1108. doi: 10.1097/SCS.00000000000005352
 13. Martelli DRB, Coletta RD, Oliveira EA, Swerts, Mário Sérgio Oliveira MC, Rodrigues LAM. Association between maternal smoking, gender, and cleft lip and palate. *Braz J Otorhinolaryngol.* 2015; 81(5): 514–519. doi: 10.1016/j.bjorl.2015.07.011
 14. Pool SMW, der Lek LMV, de Jong K, Vermeij-Keers C, Mouës-Vink CM. Embryologically based classification specifies gender differences in the prevalence of orofacial cleft subphenotypes. *Cleft Palate Craniofac J.* 2021; 58(1): 54–60. doi: 10.1177/1055665620935363
 15. Martinelli M, Palmieri A, Carinci F, Scapoli L. Non-syndromic cleft palate: an overview on human genetic and environmental risk factors. *Front Cell Dev Biol.* 2020; 8: 592271. doi: 10.3389/fcell.2020.592271
 16. Kati FA. Cleft and lip palate: review article. *World J Pharm Med Res.* 2018; 4(7): 155–163.
 17. Herkrath APC de Q, Herkrath FJ, Rebelo MAB, Vettore MV. Parental age as a risk factor for non-syndromic oral clefts: a meta-analysis. *J Dent.* 2012; 40(1): 3–14. doi: 10.1016/j.jdent.2011.10.002
 18. Widayanti N, Sudjatmiko G, Putri NM. Parental age as a risk factor of children with cleft lip in Jakarta population: does paternal age play a role? *J Plast Rekonstruksi.* 2017; 4(1): 88–94. doi: 10.14228/jpr.v4i1.220
 19. Pogrel MA, Kahnberg K-E, Andersson L. *Essentials of Oral and Maxillofacial Surgery.* 1st ed. West Sussex: John Wiley & Sons, Ltd; 2014. 297–331.
 20. Oner DA, Tastan H. Cleft lip and palate: epidemiology and etiology. *Otorhinolaryngol Head Neck Surg.* 2020; 5: 1–5. doi: 10.15761/OHNS.1000246
 21. Kummet CM, Moreno LM, Wilcox AJ, Romitti PA, Deroo LA, Munger RG, Lie RT, Wehby GL. Passive smoke exposure as a risk factor for oral clefts—a large international population-based study. *Am J Epidemiol.* 2016; 183(9): 834 – 841. doi: 10.1093/aje/kwv279
 22. Sabbagh HJ, Hassan M, Hassan A, Innes NPT. Passive smoking in the etiology of non-syndromic orofacial clefts : a systematic review and meta-analysis. *PLoS One.* 2015; 10(3): 1–21. doi: 10.1371/journal.pone.0116963
 23. Silva CM, Moraes Pereira MC, Queiroz TB, Neves LT. Can parental consanguinity be a risk factor for the occurrence of nonsyndromic oral cleft? *Early Hum Dev.* 2019; 135: 23–26. doi: 10.1016/j.earlhumdev.2019.06.005

24. Sabbagh HJ, Innes NP, Sallout BI, Alamoudi NM, Hamdan MA, Alhamlan N, Al-Khozami AI, Abdulhameed FD, Al-Aama JY, Mossey PA. Birth prevalence of non-syndromic orofacial clefts in Saudi Arabia and the effects of parental consanguinity. *Saudi Med J.* 2015; 36(9): 1076–1083.
doi: 10.15537/smj.2015.9.11823
25. Rajeev BR, Prasad KV V, Shetty PJ, Preet R. The relationship between orofacial clefts and consanguineous marriages: A hospital register - based study in Dharwad, South India. *J Cleft Lip Palate Craniofacial Anomalies.* 2017; 4(1): 3–8. doi: 10.4103/2348-2125.205410
26. Wawan AMD. *Teori dan Pengukuran Pengetahuan, Sikap, dan Perilaku Manusia.* Yogyakarta: Nuha Medika; 2017. 12–13.
27. Acuña-González G, E. Medina-Solís C, Maupomé G. Family history and socioeconomic risk factors for non-syndromic cleft lip and palate: A matched case-control study in a less developed country. *Biomedica.* 2011; 31(3): 381–391.
doi: 10.1590/S0120-41572011000300010