

Description of oral motoric disorders in 2-4 years old children

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ABSTRACT

Introduction: Oral motor disorders, such as speech and swallowing disorders, often occur in children. Generally parents complain that children refuse to eat hard food, drooling excess, and unable to speak clearly. Oral motor disturbance can occur due to the unavailability of maturation of oral motor structure. This study was aimed to determine the description of oral motor disturbance in children aged 2-4 years in some Integrated Health Service (*Posyandu*) in Bandung. **Methods:** The method of research was descriptive with cross sectional design. The study was conducted on 100 parents who came to six *Posyandu* in Bandung by using questionnaires through guided interviews by researchers. Samples were taken using multistage random sampling technique. The results will be presented in tabular form and assessed using Arikunto standard criteria. **Results:** The results showed a low percentage in oral motor disturbances. Indicators of oral motor disturbance in children aged 2-4 years included in either category. As for children who have oral motor disorders exhibit various manifestations. **Conclusion:** The description of oral motor disorders in children aged 2-4 years in *Posyandu* in Bandung was shown by various manifestations. Based on the number of populations taken, oral motor disorders in children aged 2-4 years included into either category.

Keywords: Oral motoric, oral motoric disorders, 2-4 tahun years old

INTRODUCTION

Oral motor is a coordination and movement of hard tissue, soft tissue, vascular system, and the nervous control of face area and oral that forms the oral motor function. The coordination of this structure is very important for the function of talking, chewing, and swallowing with a large variety of food textures. Oral motor development started since the baby in the womb and continues until it reaches the age of 4 years.¹

Baby already used muscles and movements that later needed to eat since the age of 3 months pregnancy², which will continue with the initial reflex of children who seen from the process of

breastfeeding. The process of breastfeeding is one of the various kinds of oral motor function that will increasingly develop as you get older where the forming structure will be developed. The development and growth of structure-forming functions of the oral motor usually become mature at the age of 5 years.³ Children who have been able to master the whole functions such as chewing, swallowing, and speaking, shows maturity on oral motor function.⁴

During the toddler, the children will experience the stages of making the function of oral motor has been done. The stages that must be done by the baby start from breast-feeding then switch the foods with various texture in

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order to develop perfectly. The maturation of oral motor structures can be interrupted if there are obstacles in the introduction of food texture. It can be seen start from the transition of consumption intake of breast milk onto the solid food's texture. The children were introduced in various food textures like liquid, pulp, semi-solid, and solid. The transition is generally started at the age of 2 years. The second years already shows the ability of the children in the movement of the jaw. The children independently will conduct self-feeding with fingers, tools, and glasses. The children will begin to learn the taste, aroma, temperature, and texture of food.³

Children often refuse consuming foods with a specific texture on the transition period and just picking a soft-textured foods to eat. Parents will have a trouble in fulfillment of children's nutrition. Parents should be able to distinguish between the children who do not want to eat certain foods otherwise known as picky eaters or can not eat with that texture. Children who can not eat certain textures can be suspected of oral motor disorders. Children can show their oral motor disorders if they can not chew or swallow food difficulty.⁵

The prevalence of oral motor disorders in children is quite high. From the previous research showed that 39.8% children experienced the disruption of oral motor abilities.⁶ The diet and mastication disorders reported 10-25% in children, 40-70% in baby, and 70-80% at the children with special need.³ Oral motor disorders often found and originally found in children with early age. Parents often do not aware of the existence of their children's disorder. The healthy children already have to master the entire oral motor ability to obtain maximum nutrients intake in the age of toddlers. Children who still have not been able to master this ability, it is feared that malnutrition will occur and influence the growth of the children.^{7,8} This article is the result of research performed on children aged 2-4 years who come to *Posyandu* which exist in Bandung.

METHODS

The research was done after getting an ethnical clearance from the Ethics Health Committee on FKUP Bandung, known as descriptive research

with cross sectional design. The research's subject was taken using multi-stage random sampling. The criteria of population taken as a sample includes boys or girls, aged 2-4 years, and children without the disorder syndrome, congenital abnormalities such as cleft lip and palate, organ abnormalities such as ankyloglosia, or cerebral palsy. The total number of research's subject who have taken using the sample size formula were as many as 100 samples.

The data was taken by using a questionnaire that includes questions about oral motor disorders. The research stage began with giving informed consent and an explanation of the research that will be done to all parents of children at *Posyandu*, then conducted interview sessions to all parents. Filling the questionnaires conducted by the researcher directly at *Posyandu*.

The data which obtained from research results has been collected, recorded and processed, then presented in tabulated form. The results of the questionnaire answers of each respondent will be calculated using a Guttman scale with a score of 0-1 and Likert scale with a score of 1-5. The total score is then calculated by the formula: $P = X/N \times 100\%$, with P= percentage (%); X= total of the answers (score); N= minimum total score. The calculation results are incorporated into the standard criteria⁹: 76-100%=good; 60-75%=well being; <60%=bad.

RESULTS

Research has been done based on kids who visiting to integrated health post on April 2016. Around 100 parents respondent who have kids 2-4 years old has been interview using quisioner to know the description of oral motor disturbance. Integrated health post which taken to be research location is: 1. Citizens Association (RW) 04 Integrated Health Post, Pajajaran, Cicendo Districts; 2. RW 03 Integrated Health Post, Sekeloa, Coblong Districts; 3. Mawar Merah Integrated Health Post, Cijagra, Lengkong Districts; 4. RW 07 Integrated Health Post, Cibadak, Astanaanyar Districts; 5. Batununggal Integrated Health Post, Batununggal, Bandung Kidul Districts; 6. RW 13 Integrated Health Post, Antapani Centre, Antapani Districts.

On the Table 1 showing number of childrens who comes to Bandung City Integrated Health

Post, the most patients is 2 years old around 42 persons, and then 3 years old around 40 persons, minimal patients is 4 years old around 18 persons.

Table 2 showing how to communicate based on sampling has been taken from 100 persons. Around 41 childrens (41%) is normal. Showing on the table, around 14 childrens (14%) showing the functioning of several ways of talking and then around 16 childrens (16%) can use the way of speaking to convey a message but have difficulty. Difficulty to speaking showing in 29 childrens (29 %). Based on interview with the parents, there is no childrens can't speaking.

Table 3 showing 10 from 100 childrens have oral posture is always open, and around 90 childrens (90%) have close oral posture.

Based on Table 4, there is 61 childrens (61%) dont have any problem to clamp the lips for long time, around 24 childrens can clamp the lip for certain time. And the table showing around 7 childrens (7%) have difficulty to clamp the lips in certain time. And the rest around 8 childrens (8%) only can clamp the lip a while. Based on interview with all the respondent, there is childrens who cant clamp his lip.

Table 6 showing around 98 childrens (98%) can pursed the lips like kissing and the 2 childrens cant pursed the lips. On the Table 6 showing around 96 childrens (96%) able to use straw very well and 4 childrens (4%) cant use the straw

Table 1. Sample distribution based on age

Age	Person	Percentage (%)
2 years old	42	42
3 years old	40	40
4 years old	18	18
Total	100	100

Table 2 Sample distribution based on ability to communicate

	Persons	Percentage (%)
Normal	41	41
Some speech ways works	14	14
Using speech to convey message but experiencing difficulties	16	16
Difficulty in saying few words	29	29
Unable to speech	0	0
Total	100	100

Table 3. Sample distibution based on oral posture

	Persons	Percentage (%)
Always open	10	10
Not open	90	90
Able to clamp lip easliy and for a long time	61	61
Able to clamp lips easly and for certain time	24	24
Difficulty to clamp the lips for certain time	7	7
Only able to clamp the lip a while	8	8
Cant clamp the lips	0	0
Sample distribution based on lip protrude like kissing		
Able to pursed lips	98	98
Cant to pursed lips	2	2
Sample distributon based on pritrude using the straw		
Able to using straw	93	93
Cant to using straw	7	7
Sample distribution based on Tongue Thrusting		
Stuck out tongue when swallowing	10	10
Cant Stuck out tongue when swallowing	90	90
Sample distribution based on Messy Eater		
Cluttered while eating	27	27
No mess while eating	73	73
Being able to eat difficult to chew food		
Eat a variety of foods	43	43%
Only can eat foods that are cut is to small pieces	26	26%
Food must be pounded	25	25%
Drink should be thickened	5	5%
	1	1%
Sampling distribution based on ability to eat and drink		
Being able to eat difficult to chew food	43	43%
Eat a variety of foods	26	26%
Only can eat foods that are cut is to small pieces	25	25%
Food must be pounded	5	5%
Drink should be thickened	1	1%
Sampling distribution based on ingestion		
Ability ingestion the saliva	97	97
Cant ingestion the saliva	3	3
Sampling distribution based on Drooling		
There is saliva on lips or chin	12	12
There is no saliva on lips or chin	88	88
Distribution sample according to Drooling		
Saliva on chin/ lips	12	12
No saliva on chin/ lips	88	88

Table 13. The result of calculating the questionnaire about oral motor disorder with Likert scale

	Scale					Total
	1	2	3	4	5	
The communication ability disorder	0%	29%	16%	14%	41%	100%
Lips relation disorder	0%	8%	7%	24%	61%	100%
The eating and drinkinh ability disorder	1%	5%	25%	26%	43%	100%

Table 14. The result of calculating the questionnaire about oral motor disorder with Guttman scale

	Scale		Total
	0	1	
Mouth posture disorders			
Lips protrusion disorders such as kissing	10%	90%	100%
Lips protrusion disorders by using the straws	2%	98%	100%
Tongue Thrusting	7%	93%	100%
Messy Eater	10%	90%	100%
Ingestion disorders	27%	73%	100%
Drooling	3%	97%	100%
	12%	88%	100%

Based on Table 7 there is around 10 childrens (10%) have habit stuck out tongue when swallowing and then 90 childrens (90%) cant stuck out the tongue when swallowing.

Based on Table 8, There is around 27 childrens (27%) showing cluttered while eating (*messy eater*) and the rest of 73 childrens (73%) not showing mess while eating.

Based on Table 9, Around 43 childrens (43%) dont have problem to chew the foods. In the table above, there is 26 childrens who can eat a variety of foods except the harder ones. Around 25 childrens (25%) only can eat foods that are cut in to small pieces. The data show if only 5 childrens who can eat foot be pounded and the rest of childrens (1 %) is only can drink which should be thickened

Based on table 10, we can see around 97 childrens (97 %) have ability to ingestion the saliva and the 3 childrens cant ingestion the saliva

Based on table 10, there are 97 children (97%) who able to ingest their saline and another 3 (3%) children are not able to do that

According to the data on table 11, there are 12 (12%) childrens are knowing abot their saliva on lips/chin, otherwise another 88 (88%) children are not having the saliva on lips/chin.

Based on the data in table 12, there are oral motor disorders in the form of communication ability disorder, lips relationship disorder, and the ability of eating or drinking disorder out of 100 respondents calculated using Likert scale with a score of 1-5. The measurement scale 5 shows a normal or no found disorder. The third element shown that about 41% do not have ability to communicate, 61% have no interruption relation lips, and 43% do not have the ability to eat and drink.

Based on the data in table 13, there are data from 100 people that respondents calculated using a Guttman scale with a score of 0-1. Scale measurement scale 1 is normal scale or no found any disorder. That seven items shown that about 90% do not have posture disorder, 98% have no lips protrusion disorder like kissing, 93% have no lips protrusi disorder by using a straw, 90% have no tongue thrusting, 73% not including the messy eater, 97% have no ingestion disorder, and 88% are not drooling.

DISCUSSION

The results of the interviews that have been conducted on 100 respondents who visited the Posyandu in Bandung on April 2016, can be found on tables that have shown that the percentage of oral motor disorders overview on children ages 2-4 years old is small. Each table illustrates the percentage of each element of assessment. In table 2 can be known that the communication ability of the children ages 2 - 4 years, as many as 16 children used to talk to deliver the message but still having difficulty. Children have tried to connect the words with the word but the children have a difficulty in pronouncing the word starting with the letter 'r', 'l', and 'c'. In general, the difficulty in articulation like this is considered as a delay, the children may be able to master it later or perhaps not at all.¹⁰

Based on the data in table 3, there are 10 children with an open mouth posture that caused by a variety of factors, one of them is the lack of jaw stability. A bad jaw stability can cause difficulty on mastication so their ability can not be effective in manipulating food in the oral cavity, forming a bolus, swallowing and drinking.¹¹

Table 4 shows that there are seven children who have difficulty to close the lips in a certain period. As many as eight children were only able to close their lips briefly. This can be caused by a lack of a consistent lip closure, beside that there is a lack of awareness or perception or also known as hiposensitivity on the muscles around the mouth. Generally, children who experience this hiposensitivity will not be aware of any saliva or food which left on their faces.¹⁰

During the transtition food period, the children will learn how to use drinking straws. Drinking by using straw requires a coordination between the stabilization of the jaw, protrusion of lips and closure of the lips. The children's swallow ability can also affect the success of the drinking with a straw. In table 5 indicated that there were two children who can not be pursing lips like they were kissing and in Table 6 there are seven children who are unable to use a straw. Both of these can be caused by the absence of coordination between the jaws and lips.¹²

Generally, the growing children will show tongue movement horizontally, vertically and laterally, and backwards that appears at around the age of nine months. These developments allow children to overcome the food pieces more effectively by way of chewing food and move to the side of the mouth, crossing the midline and return the food to the middle of the mouth to form a bolus. Many children with neurological development disorder could not develop lateral tongue movement. Children cannot be chewed effectively.¹¹

Tongue thrusting can cause a loss of food and the ability to form a bolus. A tongue that is consistently pushing forward, can be caused by the habit of breathing through the mouth or the use of a pacifier more than 18 months may also be known as one of the factors. As shown in Table 7 that there were 10 children that poked his tongue when swallowing. The limited movement of the tongue created the bad control toward the food, bolus formation which is slow and ineffective, bad oral transit into the back of the mouth to the preparation of ingestion and the inability to manipulate food to eat.¹¹

The movement of the cheek during the oral phase of eating and drinking will demonstrate its role in detain and move the bolus into the

mouth. Cheek support the movement of the lips and tongue. As shown in Table 8, as many as 27 children were messy when eating. The foods are generally kept by the children on the cheek. The absence of cheek tonus will make the food gathered on the lateral sulcus thus reducing the ability of children to form a cohesive bolus which is able to be swallowed.

As seen in Table 9 that as many as 25 children can only eat food in small pieces and five children were only able to eat a solid. Whereas, in Table 10 contains three child can not swallow their saliva. It proved that there are still many children who do not have good ability in mastication and ingestion. Children who do not have a good sensory awareness when chewing, both on the cheeks, lips, palate, can not manipulate the bolus perfectly. It also caused the form of a bolus is still not too soft so that the children are unable to swallow it. The complaints came usually from a pain in the throat which make the food in the mouth will come out again.¹¹

Table 11 shows that 12 children were not aware of the existence of salive on their chin/lips. Drooling that happens persistently are the indicative of the lack frequency of ingestion saliva.¹³ Incoordination and the reduction in the level of complexity of ingestion is the main mechanism of the phatofisiologic. Children with drooling will experience the decreasing of mastication efficacy which resulting from incoordination of lips, tongue, palate, pharynx, larynx, and the muscles of respiration. Children who are not able to control the saliva were known to have great difficulty in oral ingestion or volunter phase.¹⁴ Medication such as anticonvulsants and nitrazepam can also increase the production of saliva.¹⁵

Based on 12 table and 13 table, the calculation result of the questionnaire answers from 100 respondents indicate that there is a low percentage in oral motor disorders in children aged 2-4 years. This can be obtained by calculation using the scale of assessments that is ordinal scale between Likert scale which was given a score 1-5 scale and Guttman scale which are given a score 0-1. The Likert scale 5 and Guttman scale 1 show no oral motor disorders there. Every element of the question has a high percentage in the Likert scale 5 and Guttman scale 1, which shows that children

ages 2-4 years already master the ability of oral motor properly. So it can be concluded that the description of the oral motor disorders in children ages 2-4 year is low.

CONCLUSION

Based on the results of the research that has been done regarding the description of the oral motor disorders in children ages 2-4 years at Posyandu in Bandung, it can be concluded that the percentage of the population who experienced oral motor disorders was small and included into good indicator. As for children who experience oral motor disorders shows a wide range of manifestations.

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