

## Research Paper

## Evaluating the Validity and Reliability of the Knowledge, and Practice Questionnaire of Iranian Mothers About the Development of Persian-speaking Children Aged 18 to 36 Months

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**Citation** Valitabar Kerati Z, Farazi M, Ashtari A, Jazem F, Jannat M. Evaluating the Validity and Reliability of the Knowledge, and Practice Questionnaire of Iranian Mothers About the Development of Persian-speaking Children Aged 18 to 36 Months. *Iranian Rehabilitation Journal*. 2023; 21(3):421-434. <http://dx.doi.org/10.32598/irj.21.3.1528.2>

**doi** <http://dx.doi.org/10.32598/irj.21.3.1528.2>

**Article info:****Received:** 31 Aug 2022**Accepted:** 14 Dec 2022**Available Online:** 01 Sep 2023**Keywords:**

Knowledge, Attitude, Practice, Development, Questionnaire

**ABSTRACT**

**Objectives:** The mother's knowledge and attitude about the child's developmental norms can affect their practice and the quality of parent-child interaction. The quality of a child's development in the early years significantly impacts their personality and future success. Therefore, this study aims to develop and investigate the psychometric characteristics of the Iranian mother's knowledge, attitude, and practice (KAP) questionnaire about the development of communication, language, speech, and swallowing of Persian-speaking children aged 18 to 36 months and comparing them.

**Methods:** This study was a descriptive-analytical and cross-sectional study conducted on 280 mothers with typically developed children aged 18 to 36 months from different provinces of Iran. Due to the COVID-19 pandemic with the implementation of the study, the participants were selected as available, and then the snowball completed the questionnaire in both face-to-face and online methods. To check the validity of the questionnaire, face validity was calculated using the opinion of speech therapy experts and ten mothers, and content validity was calculated using the Lawshe method. To check the reliability of the questionnaire, the test re-test method was used in a two-week interval.

**Results:** The results indicated that this questionnaire has high validity (content validity index [CVI] >0.79) and reliability (intraclass correlation coefficient [ICC]=0.90). The multiple linear regression model showed that only the mother's age has a significant positive relationship with knowledge ( $B=0.082$ ,  $P=0.04$ ) about the development of communication, language, speech, and swallowing of children aged 18 to 36 months. Socioeconomic status and the mother's education had no significant relationship with the mother's KAP. Also, this study showed that the mother's knowledge, attitude, and practice about a child's development were high (mean=16.5), positive (mean=56.44), and good (mean=60.27).

**Discussion:** This study showed that the designed questionnaire is a valid and reliable tool that can be used to investigate the mother's KAP about the development of communication, language, speech, and swallowing of Persian-speaking children aged 18 to 36 months. On the other hand, speech and language pathologists can use this questionnaire in related studies and clinical evaluations to have better and more knowledge of the child's environment and the factors affecting it in Persian-speaking society.

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## Highlights

- After this study, a valid and reliable questionnaire can be used to investigate the knowledge, attitude, and practice (KAP) of Iranian mothers about the development of communication, language, speech, and swallowing of their children.
- By knowing the parent's KAP, we will understand the amount of parent-child interaction, how the child grows, and the factors affecting it.
- This questionnaire may help more extensive research in the future.

## Plain Language Summary

The family environment is crucial in the quality of the child's communication, language, speech, and swallowing development. The parents' good knowledge and attitude about the child's development leads to better practice. By improving parents' knowledge, attitude, and practice (KAP), parent-child interaction will improve and its impact on the children's development will be visible in society.

## Introduction

In the first years of a child's life, the brain grows rapidly, and almost all the child's experiences are shaped by the family environment [1]. Therefore, parent-child interaction is crucial at this time. The knowledge and attitude of the family towards the child's developmental norms and patterns can affect their practice and interaction and, of course, the way their child grows. The knowledge means the family's cognition and information about the child's development. Attitude refers to the family's views and beliefs, which indicates their motivation to try to increase the quality of a child's development. The family's practice is the parents' behavior regarding the development of the child's communication, language, speech, and swallowing, which determines the way of his development [1, 2].

According to the [World Health Organization \(WHO\)](#), all parents should know about the norms of early child's development [3, 4]. Studies conducted in this field show that it is essential to improve parents' knowledge in the field of child development, and it is possible to create a correct attitude in them and increase their motivation for better practice by educating parents and increasing their awareness of professionals [5]. According to the previous studies, the parents' age [5], socioeconomic status [2, 6, 7], culture [8, 9], education level [2, 5, 10-12], child's gender [1], mother's experience [9], and family mental health [13] are the factors that may affect the knowledge, attitude, and practice (KAP).

The studies conducted on parents' KAP about child's development in different societies, such as America [14, 15], China [16], and Australia [17] show that in most cases, they have tried to examine the KAP of parents towards their children with disorders (such as autism, hyperactivity, and attention deficit) and less has been discussed about the KAP of parents who have typically developed children.

The research was conducted in 2010 in which the infant developmental knowledge questionnaire (KIDI) was used to evaluate parents' attitudes and beliefs towards children's communication and language development in European American mothers. In this study, other influencing variables were also measured in the attitudes of 269 mothers. Age, education, and economic level were influential factors [5]. In 2016, a study conducted in Tehran City, Iran investigated Iranian parents' knowledge about early child development. Twenty-four participants, including parents or grandparents, who were Persian speakers and had a child less than three years of age, participated in this study. In this study, it was found that the parent's knowledge about the child's early development is not enough, and it is necessary to take measures in this field. In addition, the results of this study showed that the parent's knowledge about the child's movement, speech, and language development was more but less about cognitive development and very little about social-emotional development [3].

Due to the cultural differences and different socio-economic and educational levels in different countries, it is necessary to address this issue in each country and at each cultural, social, and economic level. In Iran, no practical tools exist to evaluate the KAP of parents with children with speech and language disorders and typically developed children. Therefore, it seems necessary to prepare a questionnaire for examining the KAP of Iranian mothers regarding the communication, language, speech, and swallowing of typically developed children aged 18 to 36 months. This study was conducted to prepare a questionnaire of mothers' KAP about the development of communication, language, speech, and swallowing of typically developed children aged 18 to 36 months and to check its validity and reliability to make a localized, comprehensive, and reliable tool available to researchers and speech therapists.

## Materials and Methods

In this study, participants included 280 Persian-speaking Iranian mothers living in Tehran, Guilan, Mazandaran, Khorasan-e-Razavi, Qazvin, Yazd, and Khuzestan Provinces, Iran. All of these mothers had typically developed children in the age range of 18-36 months. Also, all the mothers were fluent in Persian (even if they were bilingual), had no other child with a developmental disability, were not divorced, and had at least elementary literacy. The ages and stage questionnaire (ASQ) was used to assess the typically developing children whose mothers were included in the study, (on the ASQ, Cronbach's  $\alpha$  for total score was 0.86, confirming internal consistency). Male gender, prematurity, low paternal education, low family income, and small for gestational age were associated with low 'ASQ total scores,' confirming construct validity.

Regarding construct validity with special education as a criterion, sensitivity was best using the 'ASQ domain score' or the 'ASQ total score' with parental concerns (0.96). However, the specificity was best (0.93) using the ASQ total score [23]. This questionnaire was in the child's medical record. Informed consent was obtained from all mothers participating in this study.

## Procedure

This study had two phases, the first phase was instrument design, and the second phase was descriptive-analytical and cross-sectional. It was conducted to design and psychometrically assess the KAP of Iranian mothers regarding the development of communication, language, speech, and swallowing of children aged 18 to 36 months.

In the first phase of this study, using literature review, experts' opinions, the book of the American Hearing Loss Institute [18], and several questionnaires, such as the parental knowledge assessment questionnaire (KIDI) [19], the communication interaction measurement scale (FOCUS) [20], feeding and swallowing function questionnaire [21], children's developmental concepts questionnaire [22], ages and stages questionnaire (ASQ) [23], infant and toddler growth scale (Bayley-III) [24] and previous experiences with babies questionnaire (COPE) [25], a questionnaire were designed. With the consultation of 10 experts in the field of speech therapy, items related to the culture of Iranian society were added to the questionnaire, and other reforms were made. Each item was adjusted according to age (18 to 36 months) and the development of communication, language, speech, and swallowing related to that age.

To investigate the face validity of the questionnaire, 10 mothers who did not participate in the study and 10 speech-language pathologists were used. For this purpose, based on a five-item Likert scale, participants were asked to consider each item's level of difficulty, ambiguity, importance, and relevance on a scale of 1 to 5 to determine how strong or weak each item is. The face validity of this questionnaire was obtained for all questions above 5.1. The method of Lawshe was used to check the content validity of this questionnaire. According to this method, the content validity of the questionnaire was checked by referring to the opinions of 10 speech and language pathology experts and calculating the content validity index (CVI) and content validity ratio (CVR) indices. The CVR index was calculated with the formula  $CVR = (N_e - N/2) / (N/2)$ . According to  $CVI > 0.79$  and  $CVR > 0.75$  for all questions, it was found that this questionnaire has high content validity.

The participants were first selected with the convenience method (23%) and then by snowball sampling (77%). Due to the COVID-19 pandemic and lack of access to samples, 58% were done face-to-face, and 42% were done online via virtual services, such as [Telegram](#) and [WhatsApp](#). In face-to-face sampling, mothers responded to questionnaires in their homes or health centers. In online sampling, the questionnaire and related explanations by voice message were sent to 132 mothers on social networks ([Telegram](#), [WhatsApp](#), and [Instagram](#)), and they responded to it up to 2 days later (118 of 132 completed and returned the questionnaire). Ten percent of the total subjects (28 people) completed the same questionnaire again two weeks later to obtain the reliability of the test re-test.

## Measure

The present questionnaire included three general sections of knowledge, attitude, and practice; in each section, four categories of communication development, language development, speech development, and swallowing development were considered. In the knowledge evaluation section, 22 items were presented, and if the answer was correct, a score of 1 was given, and if it was incorrect, a score of 0 was considered. In the attitude section, 22 items were proposed, measured with a 5-item Likert scale, and in the practice section, 24 items were proposed, which were again measured with a 5-item Likert scale, too.

In the second phase of the study, the questionnaire was completed by 280 mothers who were selected according to the inclusion and exclusion criteria based on the sample size.

The face validity of the present questionnaire was calculated based on the opinions of speech therapists and mothers:

$$\text{Impact score} = \text{Frequency (\%)} \times \text{Importance [26]}$$

The method of Lawshe was used to check the content validity of this questionnaire. Two weeks after completing the questionnaire, 28 mothers completed the same questionnaire again to obtain the reliability of the test re-test.

In addition, the demographic information form, the source of parental information, supplementary questions, and the main questionnaire were provided to parents. The mother's measure of educational and socioeconomic status was self-reported in the questionnaire.

## Statistical analysis

The reliability of this questionnaire was obtained with the test re-test method over two weeks on 28 participants at a significance level of  $P \leq 0.05$  (intraclass correlation coefficient [ICC]=0.90) to analyze all statistical data from SPSS software, version 22.

The data obtained from completing the questionnaires were analyzed with a correlation between simple and multiple linear regression.

Due to the abnormal distribution of the data, which was checked based on the Kolmogorov-Smirnova test, the median was used for the variables of KAP. The Kruskal-Wallis test was used to compare and determine a significant difference between the four areas of development

of communication, language, speech, and swallowing in the three parts of KAP. Spearman's non-parametric test was used to analyze and determine the correlation between communication, language, speech, and swallowing development.  $P < 0.05$  is considered a significant level. Then, using a multiple linear regression model, the factors affecting each of the three items of KAP about the development of communication, language, speech, and swallowing of children aged 18 to 36 months were analyzed and investigated. To investigate the effect of maternal age, mother's level of education, and socioeconomic status on KAP, first, a single linear regression model was fitted to each of the independent variables, and the variables whose probability value was less than 0.2 ( $P < 0.2$ ) were the multiple linear regression model was entered simultaneously and the variables whose probability was less than 0.05 ( $P < 0.05$ ) were considered significant.

## Results

In this study, the mothers of 141 girls and 139 boys participated. Seventy-one children were between 18 and 24 months, 73 children were between 25 and 30 months, and 136 children were between 31 and 36 months.

Finally, by adding only one question to the knowledge section, a questionnaire containing three separate areas of knowledge (22 items), attitude (22 items), and practice (24 items) was prepared. In the knowledge section, out of 22 available items, items 1 to 6 are related to communication development, items 7 to 11 are related to language development, items 12 to 16 are related to speech development, and items 17 to 22 are related to swallowing development. In the attitude section, out of 22 available items, items 1 to 7 are related to communication development, 8 to 12 are related to language development, 13 to 17 are related to speech development, and 18 to 22 are related to swallowing development. In the attitude section, out of 22 available items, items 1 to 7 are related to communication development, 8 to 12 are related to language development, 13 to 17 are related to speech development, and 18 to 22 are related to swallowing development. In the practice section, out of 24 available items, items 1 to 6 are related to communication development, items 7 to 12 are related to language development, items 13 to 18 are related to speech development, and items 19 to 24 are related to swallowing development. After preparing the final questionnaire, a pilot study was conducted on 28 mothers selected according to the inclusion criteria, and based on the results, the final version of the questionnaire was prepared (look at appendixes).

**Table 1.** Descriptive values of KAP of mothers of children aged 18-36 months about speech, language, swallowing, and communication development

Category	Minimum	Maximum	Mean±SD
Knowledge	7	22	16.50±2.59
Attitude	42	82	56.44±7.93
Practice	45	79	60.27±7.07

The face validity of the present questionnaire, which was calculated based on the opinion of speech therapists and mothers by using, showed that the quantitative index of all items was more than 1.5, which indicated that the items were appropriate and considered acceptable.

The results of checking the content validity of the current questionnaire with the Lawshe method showed the value of CVI >0.79 and CVR >0.75 for all items.

The results of the test re-test reliability, which was conducted on 10% of the study participants (28 mothers) at a significance level of 95%, indicated the high reliability of the questionnaire (ICC=0.90).

The average scores of 280 mothers in the field of knowledge showed that the subjects' knowledge (knowledge of mothers) was higher than average (16.5±2.59 (75%). The mean scores of 280 mothers in the field of attitude showed that more than half of them had a proportionate, positive and correct attitude towards the studied developmental areas (Mean±SD 56.44±7.93) [64.13%], and the Mean±SD score of 280 mothers in practice section was 60.27±7.07 (62.78%), which showed that more than half of the mothers practiced adequately and well 60.27±7.07 (Table 1).

In the Kruskal-Wallis test survey, a statistically significant difference is observed between the investigated areas (communication, speech, language, and swallowing) in the questionnaire due to the non-normal distribution of the data. It was found that the four development areas of communication, language, speech, and swallowing in knowledge (108.99), attitude (777.75), and practice (268.90) are significantly different from each other (P<0.05). From the comparison of the averages obtained in the knowledge section, it can be concluded that mothers' knowledge of speech development was more than in other areas. The following ranks included knowledge about language, swallowing, and communication development, respectively. In the attitude section, mothers' attitudes after communication development gained more

points about swallowing, language, and speech development, respectively. The comparison of the averages obtained in the practice section also showed that mothers' practice was better first in language development and then in the field of swallowing, communication, and speech development, respectively.

To investigate the effect of factors, such as parent's age, education, and socioeconomic status on the development of communication, language, speech, and swallowing of children aged 18 to 36 months, first, a simple linear regression was applied to each of the independent variables and the variables whose probability value was less than 0.2 (P<0.2) were simultaneously entered in the multiple linear regression model.

The results of the data from this analysis showed that only the variable of mother's age had a significant positive relationship with knowledge (B=0.082; P=0.04) about the development of communication, language, speech, and swallowing of children aged 18 to 36 months. This means that the knowledge of mothers has also increased with age.

## Discussion

The present study was conducted to design and psychometrically measure a three-part questionnaire to measure mothers' KAP about the development of communication, language, speech, and swallowing of children aged 18 to 36 months. The face validity of the questionnaire was evaluated with the opinion of ten speech therapy specialists and ten mothers. Its content validity was explored using CVI and CVR. Since, in this study, mothers of different ages, educational levels, socioeconomic statuses, and cultural differences participated, the high face validity of the questionnaire was essential to match the appearance of the items with the main topic, clarity, and ease of understanding of the items. The values obtained about face validity showed that the appearance of the items related to the present questionnaire was appropriate to the intended purpose, the exact meaning of the



items was conveyed to the subjects, the level of difficulty was proportional, and the perception of the subjects was consistent with the opinion of the researcher and other experts. The correlation coefficient between consecutive runs in this study showed the high repeatability of the test (ICC=0.90). In the research conducted by Bornstein et al. [5], a 75-item questionnaire called KIDI was used to evaluate parents' attitudes and beliefs regarding the development of communication and language of children aged 0-24 months in American-European mothers. This questionnaire assesses parental practices, developmental processes, health and safety guidelines, and norms and milestones relevant to children's development from 0-24 months. The reliability of this test has been obtained by test-retest reliability coefficient ( $r$  [58]=0.92), and internal consistency has been reported between 0.50 and 0.82. The split-half reliability coefficient of the KIDI for mothers is 0.85, which indicates the high reliability of this questionnaire [27]. Older mothers, mothers with more education or higher occupational status, and mothers from families with higher socioeconomic status tended to score higher on the KIDI. On the other hand, factors, such as the child's gender, having a job or being a housewife, giving birth to a child, or adopting a child did not significantly change parents' knowledge [5].

The present study's results on mothers' knowledge level about the development of communication, language, speech, and swallowing of children aged 18 to 36 months indicate a high level of knowledge of mothers (median=75%). The results showed that four areas of development (i.e. communication, language, speech, and swallowing) significantly differ ( $P=0.02$ ) in the knowledge section. So that the highest level of knowledge is related to speech development, followed by language development, swallowing development, and knowledge about communication development. These results are consistent with the results of some studies that have examined the parent's knowledge about child development [6, 11, 12, 28] and have discrepancies with some others [3, 16, 29, 30], which can be due to various factors, such as the time of the study, sample size, research methodology or cultural differences in the studied communities. On the other hand, some studies show that parents' knowledge about motor development was more than communication and cognitive development [3, 31]. Also, the present study's results showed that the mother's age has a significant relationship with her knowledge about the studied children as the study of Bornstein [5] and contrary to the study of Scarzello [28]. Contrary to the study of Bornstein [5] and Scarzello [28], the results of this study did not show a significant difference regarding the effect of mothers' education on their knowledge, which may be

explained by the similarity of the participating mothers' educational levels. This result is consistent with Safadi et al.'s study [31]. They stated that the parent's education level cannot affect their knowledge about child development [31]. On the other hand, contrary to Bornstein's study [16] and other studies conducted in this field, the results showed that the family's socioeconomic status had no significant relationship with mothers' KAP. The homogeneity of the socioeconomic status of mothers participating in the present study (82.5% average, 2.5% poor, and 15% above average) can be seen as a reason for observing these results. In 2011, Pia Deimann investigated the level of knowledge of mothers about the motor, language, and cognitive development of children aged 3 to 6 years using the developmental test of Wiener Entwicklungs, a developmental test for children 3 to 6 years old to assess mother's knowledge about developmental norms). In this study, mothers who had typically developed children scored high in terms of the accuracy of their beliefs about development; On the other hand, mothers who had a child with a language delay or adopted a child had less information about the child's development and did not know what skills the child would acquire at each stage. Their expectations for the child to acquire skills were beyond his age [32].

By comparing the results related to each dimension, it was found that mothers' knowledge about speech development was more in the present study than in other areas. The following ranks included knowledge about language, swallowing, and communication development, respectively. Also, the results of the present study showed that as the knowledge of the mothers participating in the study increased, their attitude was also slightly improved, and with the improvement of their attitude, they practiced better in the development of their child's communication, language, speech, and swallowing. The parents' attitude shows their motivation in interacting with the child [33-36], and when the parent's attitude about a problem changes, their efforts to acquire knowledge and information about that problem and their practice with the child change [37, 38]. Since 62% of the mothers in the present study had a correct practice (according to their responses to the questionnaire), more than half of the mothers participating in the study had a proportionate and adequate practice. Also, mothers' practice in language development is better than in other fields, and the following ranks include practice in swallowing development, communication development, and speech development, respectively.

On the other hand, more attention has been paid to mothers' practice in communication and language development than in other fields. This contradiction in the results can be stated in such a way that conducting this study at the same time as the COVID-19 pandemic has created more opportunities for communication between mothers and children. As it is clear, dealing with mothers' practice in communication, language, speech, and swallowing development at the same time seems to be a new thing that has been considered in this study. The difference in the results of this study from similar studies may be related to various factors, such as differences in the study's methodology, sample size, culture, and time. For example, a study conducted by Habibi et al. on 24 children between the ages of 0-36 months to investigate the parents' knowledge about the child's early development showed the family's inadequate and low knowledge in this field [3] that the difference in factors, such as sample size, the studied population and the conditions resulting from the COVID-19 may be reasons for the existence of these differences. What can be seen in the previous research is that paying attention to the field of knowledge and then parent's practice is more than the attention to the field of attitude, and less attention has been paid to the issue of parents' attitudes about the child's development. The parents' attitude shows their motivation in interacting with the child, and when the parents' attitude about a problem changes, their efforts to acquire knowledge and information about that problem and their practice with the child change [37, 38]. Therefore, attention has been paid to this section in the present questionnaire.

## Conclusion

The results of this study indicate that it is essential to be aware of the current state of KAP of mothers about the development and it can have a significant impact on the knowledge of professionals and even national officials in the field of health from the level of KAP of mothers. Also, this questionnaire as a valid and reliable tool can be used by the speech therapy community to measure mothers' KAP about the development of communication, language, speech, and swallowing of children aged 18 to 36 months. By completing it with mothers who visit the clinic, a speech therapist can discover many issues about the child's environment that significantly impact their development; therefore they can use this questionnaire in related studies and clinical evaluations to have better and more knowledge of the child's environment and the factors affecting it in Persian-speaking society.

## Recommendations

Due to the importance of the studied topic in the development of children and the adaptation of appropriate approaches in the field of education and health, a larger sample size (national-level study) should be investigated in future studies. More extensive and diverse ages, education levels, and socioeconomic statuses should be selected. Furthermore, the study should be conducted on parents with children with developmental/communication delays/impairments.

Among the limitations of this study, it can be mentioned that it coincided with the COVID-19 pandemic, which affected access to the target community. Most studied samples were in the medium socioeconomic level, which can affect the generalization of the results.

## Ethical Considerations

### Compliance with ethical guidelines

This study was approved by the Ethics Committee of the [University of Social Welfare and Rehabilitation Sciences](#) (Code:IR.USWR.REC.1398.168).

### Funding

The paper was extracted from the MSc thesis of Zahra Valitabar Kerati, approved by Department of Speech therapy, [University of Social Welfare and Rehabilitation Sciences](#).

### Authors' contributions

All authors equally contributed to preparing this article.

### Conflict of interest

The authors declared no conflict of interest.

### Acknowledgments

The authors highly appreciated the parents who patiently participated in this research. Also, the authors are grateful to the professors and staff of the [University of Social Welfare and Rehabilitation Sciences](#) who helped in this thesis.

## References

- [1] Steele H, Steele M. Parenting matters. What is parenthood? Lynnfield: Crossref; 2013. [DOI:10.18574/nyu/9780814729151.003.0010]
- [2] Rowe ML. Child-directed speech: Relation to socioeconomic status, knowledge of child development and child vocabulary skill. *Journal of Child Language*. 2008; 35(1):185-205. [DOI:10.1017/S0305000907008343] [PMID]
- [3] Habibi E, Sajedi F, Afzali HM, Hatamizadeh N, Shahshahani S, Glascoe FP. Early childhood development and Iranian parents' knowledge: A qualitative study. *International Journal of Preventive Medicine*. 2017; 8:84. [DOI:10.4103/ijpvm.IJPVM\_159\_17] [PMID]
- [4] World Health Organization (WHO). Violence against children [Internet]. 2009 [Updated 2023 September 24]. Available from: [Link]
- [5] Bornstein MH, Cote LR, Haynes OM, Hahn CS, Park Y. Parenting knowledge: Experiential and sociodemographic factors in European American mothers of young children. *Developmental Psychology*. 2010; 46(6):1677-93. [DOI:10.1037/a0020677] [PMID]
- [6] Safwat RF, Sheikhany AR. Effect of parent interaction on language development in children. *The Egyptian Journal of Otolaryngology*. 2014; 30(3):255-63. [DOI:10.4103/1012-5574.138488]
- [7] Shrestha M, Ulak M, Strand TA, Kvestad I, Hysing M. How much do Nepalese mothers know about child development? *Early Child Development and Care*. 2019; 189(1):135-42. [DOI:10.1080/03004430.2017.1304391]
- [8] Sohr-Preston SL, Scaramella LV, Martin MJ, Neppel TK, Ontai L, Conger R. Parental socioeconomic status, communication, and children's vocabulary development: A third-generation test of the family investment model. *Child Development*. 2013; 84(3):1046-62. [DOI:10.1111/cdev.12023] [PMID]
- [9] Hoseini BL, Saeidi M, Vakili R, Kiani MA, Rabiei M, Khakshour A, et al. Assessment the relationship between parents' literacy level with children growth in Mashhad: An analytic descriptive study. *International Journal of Pediatrics*. 2(2):59. [DOI:10.22038/ijp.2014.2521]
- [10] Sigel IE. Does hotheadedness rob children of their childhood? *Early Childhood Research Quarterly*. 1987; 2(3):211-25. [DOI:10.1016/0885-2006(87)90031-7]
- [11] Huang KY, O'Brien Caughy M, Genevro JL, Miller TL. Maternal knowledge of child development and quality of parenting among White, African-American and Hispanic mothers. *Journal of Applied Developmental Psychology*. 2005; 26(2):149-70. [DOI:10.1016/j.appdev.2004.12.001]
- [12] DYG Inc. What grown-ups understand about children: A national benchmark survey. Washington: ERIC Publishing; 2000. [Link]
- [13] Belsky J. The determinants of parenting: A process model. *Child Development*. 1984; 55(1):83-96. [DOI:10.2307/1129836] [PMID]
- [14] Chen LS, Xu L, Huang TY, Dhar SU. Autism genetic testing: A qualitative study of awareness, attitudes, and experiences among parents of children with autism spectrum disorders. *Genetics in Medicine*. 2013; 15(4):274-81. [DOI:10.1038/gim.2012.145] [PMID]
- [15] Moldavsky M, Sayal K. Knowledge and attitudes about attention-deficit/hyperactivity disorder (ADHD) and its treatment: the views of children, adolescents, parents, teachers and healthcare professionals. *Current Psychiatry Reports*. 2013; 15(8):377. [DOI:10.1007/s11920-013-0377-0] [PMID]
- [16] Bornstein MH, Cote LR. "Who is sitting across from me?" Immigrant mothers' knowledge of parenting and children's development. *Pediatrics*. 2004; 114(5):e557-64. [DOI:10.1542/peds.2004-0713] [PMID]
- [17] West J, Taylor M, Houghton S, Hudyma S. A comparison of teachers' and parents' knowledge and beliefs about attention-deficit/hyperactivity disorder (ADHD). *School Psychology International*. 2005; 26(2):192-208. [DOI:10.1177/0143034305052913]
- [18] Weitzman E, Greenberg J. Learning language and loving it: A guide to promoting children's social, language and literacy development in early childhood settings. Toronto: Hanen Centre; 2002. [Link]
- [19] McGillicuddy-De Lisi AV, Subramanian S. Tanzanian and United States mothers beliefs about parents and teachers roles in childrens knowledge acquisition. *International Journal of Behavioral Development*; 1994. [Link]
- [20] Thomas-Stonell N, Oddson B, Robertson B, Rosenbaum P. Validation of the focus on the outcomes of communication under six outcome measure. *Developmental Medicine and Child Neurology*. 2013; 55(6):546-52. [DOI:10.1111/dmcn.12123] [PMID]
- [21] Wardle J, Guthrie CA, Sanderson S, Rapoport L. Development of the children's eating behaviour questionnaire. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*. 2001; 42(7):963-70. [DOI:10.1111/1469-7610.00792] [PMID]
- [22] Liu Y, Li J, Zheng Q, Zaroff CM, Hall BJ, Li X, et al. Knowledge, attitudes, and perceptions of autism spectrum disorder in a stratified sampling of preschool teachers in China. *BMC Psychiatry*. 2016; 16:142. [DOI:10.1186/s12888-016-0845-2] [PMID]
- [23] Sajedi F, Vameghi R, Mojembari AK, Habibollahi A, Lornejad H, Delavar B. [Standardization and validation of the ASQ developmental disorders screening tool in children of Tehran city (Persian)]. *Tehran University Medical Journal*. 2012; 70(7):436-46. [Link]
- [24] Balasundaram P, Avulakunta ID. Bayley scales of infant and toddler development [Internet]. 2022 [Updated 2022 November 21]. Available from: [Link]
- [25] Shakibayi MI, Zarifian T, Zanjari N. Speech characteristics of childhood apraxia of speech: A survey research. *International Journal of Pediatric Otorhinolaryngology*. 2019; 126:109609. [DOI:10.1016/j.ijporl.2019.109609] [PMID]
- [26] Lacasse Y, Godbout C, Sériès F. Health-related quality of life in obstructive sleep apnoea. *The European Respiratory Journal*. 2002; 19(3):499-503. [DOI:10.1183/09031936.02.00216902] [PMID]
- [27] MacPhee D. Manual: Knowledge of infant development inventory. Carolina: University of North Carolina; 1981. [Unpublished Manuscript].



- [28] Scarzello D, Arace A, Prino LE. Parental practices of Italian mothers and fathers during early infancy: The role of knowledge about parenting and child development. *Infant Behavior & Development*. 2016 ;44:133-43. [DOI:10.1016/j.infbeh.2016.06.006] [PMID]
- [29] Rikhy S, Tough S, Trute B, Benzie K, Kehler H, Johnston DW. Gauging knowledge of developmental milestones among Albertan adults: A cross-sectional survey. *BMC Public Health*. 2010; 10(1):183. [DOI:10.1186/1471-2458-10-183] [PMID]
- [30] Al-Maadadi F, Ikhlef A. What mothers know about child development and parenting in Qatar: Parenting cognitions and practices. *The Family Journal*. 2015; 23(1):65-73. [DOI:10.1177/1066480714555669]
- [31] Safadi RR, Ahmad M, Nassar OS, Alashhab SA, AbdelKader R, Amre HM. Jordanian mothers' knowledge of infants' childrearing and developmental milestones. *International Nursing Review*. 2016; 63(1):50-9. [DOI:10.1111/inr.12185] [PMID]
- [32] Deimann P, Kastner-Koller U. Maternal evaluations of young children's developmental status: A comparison of clinic-and non-clinic-groups. *Psychological Test and Assessment Modeling*. 2011; 53(2):214-27. [Link]
- [33] Longman. Longman dictionary of contemporary English. London: Longman; 1998. [Link]
- [34] Oxford University Press. English dictionary, thesaurus, & grammar help. Oxford: Oxford University Press.
- [35] No Author. Advanced English dictionary: Meanings & definition - Apps on Google Play.
- [36] Merriam-Webster, Incorporated. The merriam-webster dictionary. Springfield: Merriam-Webster, Incorporated. [Link]
- [37] Benasich AA, Brooks-Gunn J. Maternal attitudes and knowledge of child-rearing: Associations with family and child outcomes. *Child Development*. 1996; 67(3):1186-205. [DOI:10.1111/j.1467-8624.1996.tb01790.x] [PMID]
- [38] Kreuter M. Community health promotion ideas that work: A field-book for practitioners. Toronto: Jones and Bartlett; 2003. [Link]

## Appendix 1: Informed Consent Form

Dear parents, this is Zahra Valitabar Kerati, the supervisor of the thesis titled “ Examining the KAP in parents about communication, language, speech and swallowing development of 18 to 36-month-old children. “I undertake the following for your participation and cooperation:

1. Do not harm the physical, moral, mental health, and spiritual dignity of yourself and your child.
2. The privacy, identity, and information related to your personal and family details are confidential and protected from invasion, except with your consent.
3. You can cancel the cooperation without any worries, losses, or damages.

Phone number: 0000000000

Address: Tehran, Iran

Signature:

According to the method of conducting this research, the way of your cooperation is to fill in the demographic information form and questionnaires related to this research.

.....

I am the child's parent. .... After reading and understanding the contents of this consent form, I give my informed consent to voluntarily participate in this research under the supervision of Mrs. Zahra, but I declare that I am of Croatian descent.

First name and last name: .....

Phone number: .....

Address: .....

Signature:

## Appendix 2: Questionnaire

### Demographic information form

Information about parents:

\* Mother:

Mother's age: ..... Mother's occupation: .....

Mother's level of education (illiterate/primary/diploma/post-graduate/bachelor/post-graduate/doctorate):  
.....

\* Father:

Father's age: ..... Father's occupation: .....

Father's level of education (uneducated/primary/diploma/post-diploma/bachelor/post-graduate/doctorate):  
.....

Information about the child:

Child's age (in months): ..... Gender: ..... birth rank (how many children are in the family?): .....

The child's mother language: ..... Age of the first words: ..... The age of expression of the first sentence and phrase: ..... having a speech and language or hearing disorder as diagnosed by a specialist doctor or speech therapist: .....

Family information:

Residence (city): ..... the number of children: ..... existence of bilingualism in the family (if any, write the first and second language):  
.....

Economic status (above average/average/below average): ..... History of separation (divorce) or death of a spouse: .....

Additional Questions:

1. Who does your child spend most of their time with during the day? .....
2. Do you have another child who, as diagnosed by a doctor or a speech therapist, has any speech and language, or hearing disorder? (If confirmed, write his age, gender, and type of disorder) .....
3. Does any of your family members, relatives, or spouse have a speech, language, or hearing disorder? (If confirmed, write the relationship of that person with your child, age, type of disorder, and treatment or non-treatment). .....
4. From which of the following sources do you get the information you need about your child's development and related issues the most (your answer can be more than one/circle of the desired items)

Telegram channels - Internet sites - Books - Pediatricians or other child specialists - Solutions and recommendations of family, friends, and acquaintances - Observing different children - The experience of your previous children - Attending educational classes

## The Questionnaire of Knowledge

\* Please read the following items carefully and answer yes/no.

Number	Questions	Responses	
1	A 1.5-year-old child can use talking in addition to pointing to communicate with others.	Yes	No
2	A 2-year-old child can do things like feeding a doll and cooking while playing.	Yes	No
3	If 2-year-old children have a request, they get help from others by saying words (such as give, water).	Yes	No
4	At around 3 years of age, the children still wait for familiar adults to communicate with them.	Yes	No
5	A child can play with other children from about 2 to 2.5 years old.	Yes	No
6	At about one year old, the children can use one thing instead of another in their games (for example, slippers instead of a phone or a plate instead of a car steering wheel).	Yes	No
7	At around three years old, a child can say 3-4 word sentences (such as "daddy bought a ball" or "mommy bear slept").	Yes	No
8	At about 1.5 years old, the child understands the meaning of more than 200 words.	Yes	No
9	At around 2.5 years old, the child can understand and carry out the mother's two-part commands (such as "go into the room, get the ball" or "take a towel and dry your hands") without her prompting.	Yes	No
10	At around two years of age, the child begins to say 2-word sentences (such as "give me water" or "mommy water").	Yes	No
11	Even up to 3 years old, the children cannot show the names of their body parts when they hear them.	Yes	No
12	At around two years old, a child naturally mispronounces many sounds.	Yes	No
13	Most of the words of 2-year-old children are understandable only to their relatives.	Yes	No
14	The prosody of children around three years old when asking a question differs from when they want to explain something.	Yes	No
15	At about three years old, half of the child's words are understandable to strangers.	Yes	No
16	At about two years old, the child should pronounce all the sounds correctly.	Yes	No
17	One and half-year-old children should be able to hold a glass by themselves to drink from it.	Yes	No
18	Two-year-old children can chew food with their mouths closed.	Yes	No
19	A 2-year-old child should be able to eat the usual table foods that adults consume.	Yes	No
20	When 2.5-year-old children drink water, it usually does not spill out of the corners of the glass and their lips.	Yes	No
21	A 3-year-old child cannot eat well with a spoon.	Yes	No
22	At 3 years of age, a child can quickly eat foods of any consistency (watery, mashed, complex, and grainy, like rice).	Yes	No

## The Questionnaire on Attitude

\* Please read the following items carefully and answer according to your level of agreement.

Direct: 5: I agree, 4: I agree to some extent, 3: I have no opinion, 2: I disagree to some extent, 1: I completely disagree

Number	Questions	Responses				
1	I think it is usually better for my child to decide what to do during the game.	5	4	3	2	1
2	If my child is more in groups, such as at parties or parks, his/her ability to communicate with others will increase.	5	4	3	2	1
3	I should improve my knowledge to treat my child well and according to his/her age and development.	5	4	3	2	1
4	I do not think there is anything wrong with playing with my child sometimes, acting completely childish, as if I am the same age as my child (for example, singing children's songs or jumping up and down).	5	4	3	2	1
5	I think it is better to teach my child to read words and count numbers or colors instead of playing with a child who wastes his/her time.	5	4	3	2	1
6	In my opinion, communicating well and effectively with my child is part of my mothering skills.	5	4	3	2	1
7	I should not expect my child to be perfectly polite in all settings (e.g. respect and say hello to everyone) because he/she is still tiny.	5	4	3	2	1
8	I think all mothers instinctively have enough information about children's development and can help their language development well.	5	4	3	2	1
9	I feel that watching many TVs and playing with tablets helps my child's language development.	5	4	3	2	1
10	I find that reading repetitive books helps my child's language development.	5	4	3	2	1
11	I feel that children learn to speak by listening to their mother, father, and others, and you do not need to make more effort to help the child speak.	5	4	3	2	1
12	I think it is normal if a child does not speak until three years old because he /she will get better by school age.	5	4	3	2	1
13	I do not think it is okay if my child repeats some parts of the words like children who stutter (for example, saying "ma-ma-mama or da-da-daddy"). This is temporary and will get better.	5	4	3	2	1
14	I think that to improve my child's pronunciation; I should remind him/her regularly to say the letters correctly.	5	4	3	2	1
15	I think the speed of my speaking significantly affects the speed of my child's speech (that is, my fast speaking causes my child to speak fast).	5	4	3	2	1
16	If I ignore the sound development of my child's teeth, he/she may not be able to speak well in the future.	5	4	3	2	1
17	I think it is normal for a child to mispronounce or use some sounds interchangeably.	5	4	3	2	1
18	I think it is better always to feed my child myself so that he/she eats well and does not suffer from malnutrition.	5	4	3	2	1
19	In my opinion, I should determine what food is suitable for my child to eat; If I follow my child's taste and interests, he/she may not get all the necessary nutrients.	5	4	3	2	1
20	I need to increase my knowledge about the ability to feed my baby so that I do not do something wrong.	5	4	3	2	1
21	I think it is still too early for my child to eat the food on the table with us, and it is not suitable for an 18 to 36-month-old child.	5	4	3	2	1
22	I think it is better to let my child eat whenever he/she wants.	5	4	3	2	1



## The Questionnaire of Practice

\* Please read the following items carefully and answer according to the extent of each item.

Direct: 5: Always, 4: most of the time, 3: sometimes, 2: rarely, 1: not at all

Number	Questions	Responses				
1	I dedicate time to playing, reading poetry, or painting with my child during the day.	5	4	3	2	1
2	I have bought household toys for my child, and we play with them.	5	4	3	2	1
3	When my child asks the question "what is this" repeatedly, I get frustrated and ask him/her to stop asking.	5	4	3	2	1
4	In most cases, my child determines what we do for play.	5	4	3	2	1
5	I always guide my child to make friends before guests come or go to the park. For example, I want my child to share toys with friends or play with other children in the park.	5	4	3	2	1
6	I meet my child's needs before he/she asks me to.	5	4	3	2	1
7	In various situations, such as play, I make simple two-step requests to my child (such as 1. Pick up the ball and 2. Give it to me).	5	4	3	2	1
8	I read simple storybooks to my child.	5	4	3	2	1
9	If my child asks me to read the same story repeatedly, I will not do it because I do not want to waste his/her time.	5	4	3	2	1
10	If my child says something that he/she shouldn't or jumps in the middle of someone's speech, I do not blame him/her and teach him/her not to do it again.	5	4	3	2	1
11	I complete my child's sentences to learn to speak correctly.	5	4	3	2	1
12	Only when my child says his request, I fulfill his/her request so that he/she knows that he/she will not get what he/she wants by pointing.	5	4	3	2	1
13	It's sweet for me when my child mispronounces some words, which is why I imitate his/her mistakes.	5	4	3	2	1
14	I ask my child to retell stories he/she has heard or make up new stories.	5	4	3	2	1
15	I practice the correct pronunciation of sounds with my child so that he/she can speak correctly.	5	4	3	2	1
16	I make my speech more melodious (like reciting poetry) and my voice thinner when talking to my baby.	5	4	3	2	1
17	I slow down my speech while talking to my child.	5	4	3	2	1
18	Because of my child's charming pronunciation mistakes, I talk about him/her in the crowd.	5	4	3	2	1
19	I give my child the same food on the table we eat.	5	4	3	2	1
20	I turn off the TV while my child is eating so that he/she is not distracted.	5	4	3	2	1
21	I do not give my baby hard foods like cucumbers or grilled chicken for fear of choking.	5	4	3	2	1
22	Because my baby does not eat clean, I prefer to feed him/her myself.	5	4	3	2	1
23	I let my child hold a spoon and eat whenever he/she wants to eat.	5	4	3	2	1
24	Because my baby takes a long time to eat, I crush his/her food and give it to him/her.	5	4	3	2	1