

Original Research Article

Influence of maternal and child factors on the dental service utilization among preschool children in Bangalore urban district: a cross-sectional study

Sruthy S.*, Manjunath P. Puranik, Sowmya K. R.

Department of Public Health Dentistry, Government Dental College and Research Institute, Bangalore, Karnataka, India

Received: 18 December 2022

Accepted: 10 January 2023

***Correspondence:**

Dr. Sruthy S.,

E-mail: sruthypsv733@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Dental visit is considered primary marker of oral care. Maternal characteristics, attitudes and psychosocial factors and the child's oral health may influence dental visits of preschool children. This study aimed to determine the influence of maternal and child factors on dental services utilization among preschool children.

Methods: A cross-sectional study was conducted among 600 preschool children and mothers visiting Anganwadis and Primary Health Centres in Bangalore Urban District. Mothers answered questions on socio-demographic characteristics and dental attendance. Maternal dental anxiety and child's oral health-related quality of life were assessed using modified dental anxiety scale and early childhood oral health impact scale respectively. Oral health of children and mothers were assessed using WHO oral health assessment form 2013 for children and adults respectively. Descriptive statistics, Poisson's regression with robust variance and mediation analysis were performed and $p < 0.05$ was considered significant.

Results: The proportion of dental visit among preschool children was 13.5%. Majority of the mothers had high dental anxiety (76.2%) and perceived their children's oral health-related quality of life to be good (71.2%). The caries experience in mothers and children were 63.5% and 54.2% respectively. Mothers with higher education (PR=2.05, $p=0.037$), caries experience (PR=3.17, $p < 0.001$) and poor perception of child's oral health-related quality of life (PR=5.88, $p < 0.001$), and children with pain experience (PR=1.62, $p=0.003$) and decayed teeth (PR=1.81, $p=0.017$) influenced children's dental visit. Maternal perception on child's oral health-related quality of life mediates the relationship between child's oral health and dental visit.

Conclusions: The utilization of dental services among preschool children was low. Maternal and child oral health factors influenced the child's dental service utilization. Hence, oral health promotion approaches towards mothers and children is the need for the hour.

Keywords: Children, Dental service utilization, Mothers, Oral health, Preschool

INTRODUCTION

Preschool period is one of the most sensitive periods of child development.¹ Children acquire skills that effect their adulthoods during this period.¹ The environmental stimulus play a crucial role in physical, mental, social and cognitive development and growth of the child.¹ The attitude and the position of the family is critical in

moulding the habit in children.¹ As children learn and adopt health behaviours from their parents.^{2,3}

Parents are the primary decision-makers on matters affecting their children's health and health care.⁴ Particularly mothers make choices about health-related practice and offer an environment that supports the development of health-related behaviours.³ They spend

more time in routine caregiving activities with their children and are most often the primary source of physical comfort and safety for the child.⁵ Mothers' health behaviour is mostly influenced by their knowledge, literacy, beliefs, culture and background.³ Their oral health knowledge, behaviour, and perceptions are necessary for preventing dental diseases in children, while dental fear can avoid visits to the dentist and ignore routine dental check-ups for their children.⁶ Dental caries is considered the primary marker of children's oral health, whereas dental visits as a marker of care.⁷ Studies have reported dental caries neglected in preschool children.⁸ It has a significant impact on children's behavior, overall development, and quality of life.⁹

Disparities and inequalities in children concerning dental services have been found in most developed and developing countries.¹⁰ Age, gender, location, oral health factors such as caries and pain experience were found to be associated with children dental visits.^{7,10-16} Despite unmet treatment needs, the search for dental care is low among preschool children.¹² Barriers such as lack of availability of appropriate care, affordability, public funding for specialized services, difficulties accessing dental care, low perceived treatment need and fear of dental procedures have deprived many low-income children to avail preventive dental care or treatment for oral health problems until infection or other urgent conditions develop.^{4,12} Early and consistent dental visit is a necessity to prevent oral diseases in children.¹⁷

Mothers play a key role in the child's oral health-related quality of life (COHRQoL) and lifestyle during the preschool period.^{18,19} Considering mother's central role in ensuring the well-being of young children, their perceptions about their children's oral health is important.⁴ These perceptions can affect at-home preventive dental care and the use of professional dental services.⁴ Their previous dental experiences and health habits can also affect the child's dental visit.¹²

Studies have shown varied utilization of dental services among preschool children across different countries.^{7,12,14-16,20} Social and environmental factors in which the child grow, location, living conditions, access to health care facility, children attending school/day care; maternal age, education, dental visit, knowledge about dental health and poor maternal perception of child's oral health influenced children's dental visit.^{7,9,10-14,16,20} Children with dental pain experience, dental caries or fair to poor oral hygiene mostly utilized dental services.^{10,16,20} However, studies associating mother's oral health and children's dental visit are limited. Hence, this study was conducted to assess the influence of maternal and child factors on dental services utilization among preschool children in Bangalore Urban District. The study hypothesized that mother's dental anxiety, COHRQoL and mother and child's oral health status influenced dental service utilization among preschool children.

METHODS

A cross-sectional study was conducted from November 2021 to November 2022 among 600 preschool child and mother dyads in Bangalore Urban District, India. The study protocol was approved by the Institutional Ethics Committee. Permissions were obtained from the director of women and child development and the medical officers to conduct studies at Anganwadis and primary health centres respectively. Sample size (600) was calculated considering the frequency of dental visit (40.7%) standard error (10%) and power (80%).¹¹ In proportionate with the centres in Bangalore Urban District, clusters were selected randomly in urban (ten Anganwadis and three primary health centres) and rural (three Anganwadis and one primary health centres) region. All the eligible mother and child dyads were recruited until the sample size was achieved. Written informed consent was obtained from the mothers. Children aged 3-5 years along with their mothers who could read and write English or Kannada were included. Children with any serious underlying medical conditions, under long term medication or with physical or learning disabilities and mothers with intellectual disabilities were excluded from the study. Cross-cultural validation of study tools (MDAS and ECOHIS questionnaires) was performed by back translation method (English-Kannada-English) with help of linguistic experts.

Modified dental anxiety scale (MDAS) is a five items questionnaire measured on a 5-point scale: not anxious (score 1), slightly anxious (score 2), fairly anxious (score 3), very anxious (score 4) and extremely anxious (score 5). The total MDAS score is calculated by adding the response scores and the total range from 5-25. The anxiety levels are classified as not anxious (MDAS score=5-10), slightly anxious (MDAS score =11-14), moderately anxious (MDAS score =15-18) and extremely anxious (MDAS score =19-25).²¹

Early childhood oral health impact scale (ECOHIS) is a 13-item questionnaire. It has two sections the child and the family impact sections consisting of 9 and 4 items respectively. The responses are scored on a 6-point Likert scale: never (score 0); hardly ever (score 1); occasionally (score 2); often (score 3); very often (score 4); don't know (score 5). The "Don't know" responses are recoded as missing. For those with up to two missing responses on the child impact section or one missing on the family impact section, an average of the remaining items for that section are imputed. ECOHIS score is calculated by adding the response scores. The total score for ECOHIS range from 0-52.²² The median value is considered to categorize and higher score suggest poor perception about their COHRQoL.⁷

Data were collected by a single trained and calibrated examiner using a structured proforma. General information on socio-demographic characteristics, dental history, child's deleterious oral habits and mother and

child’s dental attendance were collected by interviewing mothers. Maternal dental anxiety and perception of their COHRQoL was assessed using pre-validated modified dental anxiety scale and early childhood oral health impact scale respectively.^{21,22} The questionnaires were distributed to mothers and instructions were given. After completion the questionnaires were collected and checked for completeness.

Mothers and children’s clinical examination was performed under natural light using mouth mirror and CPI probe. The clinical findings were recorded on WHO Oral Health Assessment Form 2013 for Adult and Children.²³ The investigator was trained and calibrated before clinical examination. High kappa coefficient for intra-examiner reliability obtained ($k=0.92$).

The data obtained was entered in MS Excel. The statistical analyses were performed using SPSS Version 26 (IBM Corporation, SPSS Inc., Chicago, IL, USA). Normality of the data were assessed using Kolmogorov Smirnov test. Descriptive and inferential statistics were performed to assess the characteristics of the study participants. In the unadjusted analyses sociodemographic factors, dental history, child’s deleterious oral habits, mother’s dental anxiety, perceptions of COHRQoL, caries experience and child’s caries experience were the predictor variables and the utilization of dental services was the outcome variables. Variables with p values of ≤ 0.20 in the unadjusted analyses were considered for the final model. Poisson regression with robust variance was used to assess the association between the predictor and outcome variables which estimated prevalence ratios (PR) and their respective 95% confidence interval (CI). In the adjusted analysis p value less than 0.05 was considered significant. Mediation analysis using PROCESS macro version 4.1 by Andrew F. Hayes evaluated the mediation relationship of maternal perception of COHRQoL with child’s oral health and dental visit.

RESULTS

A total of 600 mother and child dyads participated in the study. The mean age of children and mothers were 3.93 ± 0.82 and 27.58 ± 3.46 respectively. Majority of the mothers (52.7%) were aged between 26-30 years. About 51.2% children were females, 77% were from urban location. About 54.7% mothers had less than ten years of education. Majority mothers were unemployed (84.3%). About 52.8% had a family income of more than Rs. 20,000/month and 71.3% belonged to lower middle class or higher. About 13.5% children and 47.3% mothers had utilized dental services. Deleterious oral habits and decayed teeth in children accounted for 13.3% and 51.5% respectively. About, 63.5% mothers had dental caries experience. Majority of the mothers were dentally anxious (76.2%). The median ECOHIS score was 0 and

about 71.2% mothers perceived their children had good oral health-related quality of life (Table 1).

Table 1: Distribution of the study participants according to mother and child characteristics.

Variables	Categories	Total (n=600)	
		N	%
Child			
Age (years)	3	195	32.5
	4	199	33.2
	5	206	34.3
Gender	Male	293	48.8
	Female	307	51.2
Pain experience	Present	132	22.0
	Absent	468	78.0
Dental visit	Visited	81	13.5
	Not visited	519	86.5
Deleterious oral habits	Present	80	13.3
	Absent	520	86.7
Decayed teeth	Present	309	51.5
	Absent	291	48.5
Mother			
Caries experience	DMFT ≥ 1	381	63.5
	DMFT=0	219	36.5
Dental anxiety	Not anxious	143	23.8
	Anxious	457	76.2
COHRQoL	ECOHIS ≥ 1	173	28.8
	ECOHIS=0	427	71.2

In the unadjusted analysis children aged ≥ 4 years (PR=1.82), male (PR=1.52), from urban location (PR=1.72), with \geq Rs 20,000 monthly family income (PR=3.93), from lower middle class and above (PR=3.22) with deleterious oral habits (PR=1.86) dental pain experience (PR=5.16), and decayed teeth (PR=3.3), mothers aged ≥ 28 years (PR=1.36) with >10 years of education (PR=3.37), unemployed (PR=2.32) those who have visited dentist (PR=1.7), with caries experience (PR=1.62), not dentally anxious (PR=2.97) and with ECOHIS ≥ 1 (PR=11.23) were more likely to have visited dentist compared to their counterparts ($p<0.20$). In the adjusted analysis children with dental pain experience (PR=1.62) and decayed teeth (PR=1.81), mothers with >10 years of education (PR=2.05), caries experience (PR=3.17) and with ECOHIS ≥ 1 (PR=5.88) were more likely to have visited dentist compared to their counterparts ($p<0.05$) (Table 2).

Mediation analysis showed a significant relationship between child’s oral health (COH) and dental visit (CDV) (total effect: coefficient 0.344, $p<0.001$); child’s oral health and maternal perception of COHRQoL (ECOHIS) (direct effect: coefficient 0.683, $p<0.001$) and maternal perception of COHRQoL mediating child’s oral health and dental visit (indirect effect: coefficient 0.124, 95% CI: 0.053 - 0.190) (Figure 1).

Table 2: Maternal and child factors associated with the children’s utilization of dental services.

Variables	Visited dentist N (%)	Not visited dentist N (%)	Unadjusted PR (95% CI)	P value	Adjusted PR (95% CI)	P value
Child						
Age (years)						
≥4	64 (15.8)	341 (84.2)	1.82 (1.09-3.01)	0.017*	0.72 (0.44-1.17)	0.187
<4	17 (8.7)	178 (91.3)	1.00			
Gender						
Male	48 (16.4)	245 (83.6)	1.52 (1.01-2.30)	0.044*	1.48 (0.92-2.39)	0.106
Female	33 (10.7)	274 (89.3)	1.00			
Location						
Urban	69 (14.9)	393 (85.1)	1.72 (0.97-3.08)	0.06*	1.44 (0.72-2.87)	0.302
Rural	12 (8.7)	126 (91.3)	1.00			
Income of the family						
≥Rs. 20,000	66 (20.8)	251 (79.2)	3.93 (2.30-6.72)	<0.001*	1.23 (0.60-2.52)	0.565
<Rs. 20,000	15 (5.3)	268 (94.7)	1.00			
Socioeconomic status						
≥lower middle class	72 (16.8)	356 (83.2)	3.22 (1.65-6.28)	<0.001*	1.27 (0.48-3.32)	0.621
<lower middle class	9 (5.2)	163 (94.8)	1.00			
Deleterious oral habits						
Present	18 (22.5)	62 (77.5)	1.86 (1.16-2.97)	0.011*	1.23 (0.83-1.84)	0.305
Absent	63 (12.1)	457 (87.9)	1.00			
Pain experience						
Present	48 (36.4)	84 (63.6)	5.16 (3.46-7.69)	<0.001*	1.62 (1.18-2.22)	0.003†
Absent	33 (7.1)	435 (92.9)	1.00			
Decayed teeth						
Present	63 (20.4)	246 (79.6)	3.3 (2.00-5.43)	<0.001*	1.81 (1.11-2.95)	0.017†
Absent	18 (6.2)	273 (93.8)	1.00			
Mother						
Age (years)						
≥28	49 (15.4)	269 (84.6)	1.36 (0.90-2.06)	0.146*	1.05 (0.61-1.83)	0.856
<28	32 (11.3)	250 (88.7)	1.00			
Education (years)						
>10	65 (19.8)	256 (94.1)	3.37 (2.00-5.68)	<0.001*	2.05 (1.04-4.04)	0.037†
≤10	16 (5.9)		1.00			
Occupation						
Unemployed	75 (14.8)	431 (85.2)	2.32 (1.04-5.18)	0.028*	1.38 (0.80-2.39)	0.249
Employed	6 (6.4)	88 (93.6)	1.00			
Dental visit						
Visited	49 (17.3)	235 (82.7)	1.7 (1.12-2.58)	0.011*	1.21 (0.63-2.31)	0.568
Not visited	32 (10.1)	284 (89.9)	1.00			
Caries experience						
DMFT≥1	42 (11.0)	339 (89.0)	1.62 (1.08-2.42)	0.019*	3.17 (2.08-4.83)	<0.001†
DMFT=0	39 (17.8)	180 (82.2)	1.00			
Dental anxiety						
Not anxious	39 (27.3)	104 (72.7)	2.97 (2.00-4.4)	<0.001*	2.05 (1.00-4.25)	0.05
Anxious	42 (9.2)	415 (90.8)	1.00			
COHRQoL						
ECOHis≥1	70 (40.5)	103 (59.5)	11.23 (6.08-20.74)	<0.001*	5.88 (2.68-12.91)	<0.001†
ECOHis=0	11 (2.6)	416 (97.4)	1.00			

*p value <0.20 is considered significant, †p value <0.05 is considered significant.

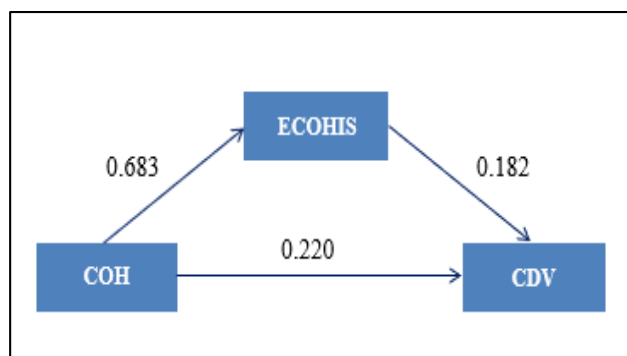


Figure 1: Relationship of maternal perception of child’s oral health-related quality of life (ECOHS) with child’s oral health (COH) and dental visit (CDV).

DISCUSSION

The present study assessed the influence of maternal and child oral health factors on dental services utilization among preschool children in Bangalore urban district. The proportion of preschool children visiting dentist across countries ranged from 5.9% to 83.59%.^{7,10-13,15,16,20,24-26} In this study a lower proportion of preschool children had utilized dental services which is lower than Murali K et al. study (40.7%).¹¹

The social determinants of health shape and modify the conditions of daily life and also influence the health-related decisions made during life time.²⁷ The demand for dental services in preschool children can be related to sociodemographic factors.²⁴ In general older preschool children with dental problems are more likely to visit dentist.²⁴ In this study, there was similar distribution of 3–5-year-old children. Gender differences in access to health care exist in the population and male children are usually favoured in the allocation of health care services.²⁴ Similarly, such differences can be expected for the utilization of dental services.²⁴ The male to female ratio were almost similar in the present study which is in line with previous studies.^{7,10-16,20,24-26}

Studies have reported either equal or varied (higher proportion of children from rural and urban) distribution of study participants.^{14,15,25} In our study majority of the participants were recruited from urban location owing to the population dwelling in Bangalore urban district.

Socioeconomic conditions can act as a predictor for child’s use of dental services, with lower socioeconomic status being the main reason for not accessing health care services.²⁴ Measures of socioeconomic position include income, educational attainment, occupation, and race/ethnicity.²⁷ Mother’s education and family income can be the reasons for greater variability in the children’s use of dental services. In earlier studies majority of mothers were either educated or uneducated.^{7,11-13,16,20,24,25} In this study, majority mothers had completed >10 years of education.

Nearly equal proportion of employed and unemployed mothers or higher proportion of employed.^{13,24,25} In this study higher proportion of the mothers were unemployed. Higher proportion with income of ≥ 1.5 BMW or < 2 BMW or ≥ 2 BMW or $> 100,000$ CNY or 12,500-25,000 CNY or \$18,000-60,000 or €16,000-24,999 or Rs.1,601-4,809 were observed in previous studies.^{7,10-13,15,16,20,24} In the present study, higher proportion of the study participants had a family income of greater than Rs 20,000 per month. Majority of the study participants in two studies belonged to middle class.^{20,26} The present study is in line with these studies.

Parents are concerned about their children developing deleterious oral habits that lead to dental problems. Hence, deleterious oral habits can be a consideration for preschool children to seek dental treatment. However, none of the reviewed studies assessed for children’s deleterious oral habits. This study observed lower proportion of deleterious oral habits among children.

Dental service utilization of children can be determined by their pain experience.¹¹ In the earlier studies 23.6-65.6% of the study participants had experienced dental pain.^{7,10,11,15,25} In the present study nearly one fifth of the children had experienced dental pain.

Dental caries is responsible for painful symptoms, tooth loss, problems at school and absenteeism.²⁴ Children with severe dental diseases tend to receive regular or emergency dental care.²⁴ Most of the studies reported higher proportion of the children without caries experience⁷ or decayed teeth whereas, some studies reported higher proportion of the children with caries experience or decayed teeth.^{10-13,15,16,20,24} In this study more than half of the children had caries experience and decayed teeth.

Mother’s oral health seeking behaviour play an important role on children’s use of dental services.¹¹ Higher proportion of mother’s in the earlier studies visited dentist.^{7,12,13} In this study nearly half of the mother’s had visited dentist.

Mothers may convey their fears to their children.²⁸ Those with higher dental anxiety have shown to block the provision of care for their children.⁷ Studies are inconclusive about mothers’ dental anxiety that reported either low or high anxiety.^{7,11,12} Majority of the mother’s in the current study reported higher dental anxiety.

Majority of mothers perceived child’s oral health as good or low ECOHIS (≤ 1 or < 3) or moderate.^{7,10-12,15,24} Majority of the mothers in the present study perceived oral health-related quality of life in their children as good.

Mothers caries experience can influence child’s caries experience through the transmission.² None of the studies reviewed have assessed for mother’s caries experience. In

our study more than half of the mothers had dental caries experience.

Earlier studies have revealed shortage in the dental workforce (common health care issue in rural areas) family income, socioeconomic status, mother's age, mother, parent or caregiver's education, dental visit, perception of child's oral health-related quality of life, child's age, dental pain, and dental caries experience, influenced child's dental visit.^{7,10,11,13-16,24,26} In this study child's factors such as their pain experience and decayed teeth and mother's education, perception on child's oral health-related quality of life and caries experience influence children's dental visit.

The utilization of dental services by children is often driven by the presence of pain.⁷ The high occurrence of untreated caries in the pre-schoolers visiting a dentist is alarming and could be attributed to the cost of dental treatment as well as mother's poor perception about significance of primary teeth in the mouth. The knowledge and skills attained through education may affect the person's cognitive functioning, making them more receptive to health education messages or able to communicate with and access appropriate health services.⁷ Our study surmise that mothers with higher education level had secured oral health of their children by ensuring dental visits.

Mother's perception about the child's oral health is an indicator for child's dental visit. In this study mothers who perception their COHRQoL to be poor were more likely to take their children for dental visit. This confirms influence of health need as an important predictor of the use of dental health services in preschool children.⁷

To the best of our knowledge, this is the first study that assessed the influence of mother's caries experience on child's dental visit. It is said that until decay interferes with the child's life, the parent/ guardian may be unaware that a dental problem even exists.¹¹ Those who believe dental disease affects their COHRQoL would take their children for dental visit.¹¹ In the present study mothers with a caries experience ensured dental visits to their children thus prioritizing child's oral health promotion and oral diseases prevention. This explains the mediating role of maternal perception of COHRQoL between child's oral health and dental visit.

Current study has some limitations. The causal relationship between the study variables could not be established because of its cross-sectional design. Only the association between the variables could be established. The social desirability bias and response bias inherent in questionnaire studies could be present. Assuring confidentiality could have minimized such biases. Thirdly, the children's fear of dental care which is an important factor for dental visits could not be assessed because preschool children have difficulty in understanding basic health concepts and incapable of

adequately expressing themselves and tend to give no response or exaggerated responses. However, mother's anxiety was used as a proxy that may reflect child's fear as perception by the mother.

Further studies that assess the influence of early preventive visits on oral health outcomes are recommended. The dental team should advice to parents when they attend for their children's dental treatment in an attempt to alter oral health behaviours.⁷ Regular visit to dentist affords long term benefits in promoting preventive services and lowering dental expenditure. Educational programmes addressing the benefits of early, regular and preventive dental visit is a necessity. It would be ideal to target expectant mothers for such educational activities.

CONCLUSION

This study reported lower utilization of dental services among preschool children. Along with the child's pain experience and decayed teeth, mother's education, dental anxiety, perception on child's oral health-related quality of life and caries experience influenced children's dental visit. Hence oral health promotional activities for mother and children are crucial in improving oral health of the children.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Kaya A, Efe E. Pre-school period of development. *Ann Nurs Pr.* 2016;3(2):1044.
2. Bozorgmehr E, Hajizamani A, Malek Mohammadi T. Oral health behavior of parents as a predictor of oral health status of their children. *ISRN Dent.* 2013;2013:741783.
3. Arora A, Chew L, Kang K, Tang L, Estai M, Thepsourinthone J, et al. Diet, nutrition, and oral health: what influences mother's decisions on what to feed their young children? *Int J Environ Res Public Health.* 2021;18(15):8159.
4. Kumar AV, Raina R, Narayanaswamy R, Pavithran VK. Access and dental health service utilization by children of government schools in Bangalore, India: a parent perspective. *J Indian Assoc Public Health Dentist.* 2020;18(4):302-7.
5. Mallers MH, Charles ST, Neupert SD, Almeida DM. Perceptions of childhood relationships with mother and father: daily emotional and stressor experiences in adulthood. *Dev Psychol.* 2010;46(6):1651-61.
6. Olak J, Nguyen MS, Nguyen TT, Nguyen BBT, Saag M. The influence of mothers' oral health behaviour and perception thereof on the dental health of their children. *EPMA J.* 2018;9(2):187-93.

7. Ganesh A, Muthu MS, Mohan A, Kirubakaran R. Prevalence of early childhood caries in India- a systematic review. *Indian J Pediatr.* 2019;86(3):276-86.
8. Yang AJ, Gromoske AN, Olson MA, Chaffin JG. Single and cumulative relations of social risk factors with children's dental health and care-utilization within regions of the United States. *Matern Child Health J.* 2016;20(3):495-506.
9. Goettems ML, Ardenghi TM, Demarco FF, Romano AR, Torriani DD. Children's use of dental services: influence of maternal dental anxiety, attendance pattern, and perception of children's quality of life. *Community Dent Oral Epidemiol.* 2012;40(5):451-8.
10. Xu M, Yuan C, Sun X, Cheng M, Xie Y, Si Y. Oral health service utilization patterns among preschool children in Beijing, China. *BMC Oral Health.* 2018;18(1):31.
11. Murali, Shanmugam S. Influence of mothers' dental anxiety and perception of child's OHRQOL towards utilization of dental services- a questionnaire study. *J Indian Assoc Public Health Dentist.* 2017;15(1):17-22.
12. Camerini AV, Silva AER, Prietsch SOM, Meucci RD, Soares MP, Belarmino V, et al. Regular dental care in preschoolers in rural Southern Brazil. *Rev Saude Publica.* 2020;54:37.
13. Mantonanaki M, Koletsi-Kounari H, Mamai-Homata E, Papaioannou W. Prevalence of dental caries in 5-year-old Greek children and the use of dental services: evaluation of socioeconomic, behavioural factors and living conditions. *Int Dent J.* 2013;63(2):72-9.
14. Chang Q, Gao X, Xu M, Zhang C, Du S, Wang X, et al. Socioeconomic-related inequality in dental care utilization among preschool children in China. *Community Dent Oral Epidemiol.* 2021;49(6):505-12.
15. Gao X, Ding M, Xu M, Wu H, Zhang C, Wang X, et al. Utilization of dental services and associated factors among preschool children in China. *BMC Oral Health.* 2020;20(1):9.
16. Piovesan C, Ardenghi TM, Mendes FM, Agostini BA, Michel-Crosato E. Individual and contextual factors influencing dental health care utilization by preschool children: a multilevel analysis. *Braz Oral Res.* 2017;31:e27.
17. Hung M, Licari FW, Lipsky MS, Moffat R, Cheever VJ, Mohajeri A, et al. Early preventive dental visits: do they reduce future operative treatments? *Dent J.* 2022;10(4):53.
18. Saied-Moallemi Z, Virtanen JI, Ghofranipour F, Murtomaa H. Influence of mothers' oral health knowledge and attitudes on their children's dental health. *Eur Arch Paediatr Dent.* 2008;9(2):79-83.
19. Costa FDS, Azevedo MS, Ardenghi TM, Pinheiro RT, Demarco FF, Goettems ML. Do maternal depression and anxiety influence children's oral health-related quality of life? *Community Dent Oral Epidemiol.* 2017;45(5):398-406.
20. Folayan MO, Alade M, Adeniyi A, El Tantawi M, Finlayson TL. Association between maternal socioeconomic factors, decision-making status, and dental utilization by children with early childhood caries in sub-urban Nigeria. *J Public Health Dent.* 2020;80(4):288-96.
21. Humphris GM, Morrison T, Lindsay SJ. The modified dental anxiety scale: validation and United Kingdom norms. *Community Dent Health.* 1995;12(3):143-50.
22. Pahel BT, Rozier RG, Slade GD. Parental perceptions of children's oral health: the early childhood oral health impact scale (ECOHIS). *Health Qual Life Outcomes.* 2007;5:6.
23. World Health Organization. *Oral health surveys: basic methods*, 5th edn. Geneva: World Health Organization; 2013.
24. Ardenghi TM, Vargas-Ferreira F, Piovesan C, Mendes FM. Age of first dental visit and predictors for oral healthcare utilisation in preschool children. *Oral Health Prev Dent.* 2012;10(1):17-27.
25. Olatosi OO, Oyapero A, Onyeka NK, Boyede GO. Maternal knowledge, dental service utilization and self-reported oral hygiene practices in relation to oral health of preschool children in Lagos, Nigeria. *PAMJ One Health.* 2020;2:10.
26. Medina-Solís CE, Maupomé G, Avila-Burgos L, Hajar-Medina M, Segovia-Villanueva A, Pérez-Núñez R. Factors influencing the use of dental health services by preschool children in Mexico. *Pediatr Dent.* 2006;28(3):285-92.
27. American Academy of Pediatric Dentistry. Policy on social determinants of children's oral health and health disparities. *The Reference Manual of Pediatric Dentistry.* Chicago, Ill.: American Academy of Pediatric Dentistry; 2021:28-31.
28. Dean JA. *Mc Donald and Avery's Dentistry for the Child and Adolescent.* 10th ed. Missouri: Elsevier; 2016.

Cite this article as: Sruthy S, Puranik MP, Sowmya KR. Influence of maternal and child factors on the dental service utilization among preschool children in Bangalore urban district: a cross-sectional study. *Int J Res Med Sci* 2023;11:666-72.