

EARLY CHILDHOOD MILK AND MILK PRODUCTS INTAKE - MATERNAL PERCEPTIONS & PRACTICES

Asma Shehzad Makhani, Ayesha Zahid Khan & Ghazala Rafique

1. Human Development Program, Aga Khan University

Corresponding author: asma.makhani@yahoo.com

ABSTRACT

The prevalence of micronutrient deficiencies in young children has a profound effect on their immune system, growth and mental development. However, many micronutrients deficiencies in children such as calcium can be prevented. This research has explored the perceptions and practices of mothers, residing in Karachi, regarding milk and milk products (MAMPs) intake in children of age 2-5 years, in order to find out the amount of MAMPs in their diet and the factors affecting such intake. This is a qualitative exploratory study. Semi structured, in-depth interviews were conducted. Eighteen mothers whose children's age were 2-5 years old were purposively recruited from three daycare centers of three different socioeconomic status areas of Karachi. The MAMPs intake of children in three different socioeconomic areas of Karachi was in accordance with 2006's, American Academy of Pediatrics recommendations for requirements, i.e. 2 cups per day of Milk/Dairy for 2-4 years old children. However, the type of MAMPs and children's preferences differs considerably. The most preferred MAMPs among children of age were yogurt and plain milk. The preferences for MAMPs in children were mainly determined by their peers, mother's ethnicity and media advertisements. Most of the mothers did not prefer giving MAMPs in several common childhood illnesses due to prevailing misconceptions. It was also explored that maternal ethnicity plays considerable role in selecting and combining various food items mainly fish with MAMPs. Recognizing the MAMPs intake of children and their mother's perceptions and practices can help researchers to better understand children's preferences for different MAMPs and the factors influencing their intake. Food policies and recommendations related to MAMPs in children can be evaluated for their relevance to children's ecological determinants to address the issues related to growth and development in early ages.

KEYWORDS

Milk intake; Milk products intake; Children; South Asia; Pakistan; Dietary Calcium.

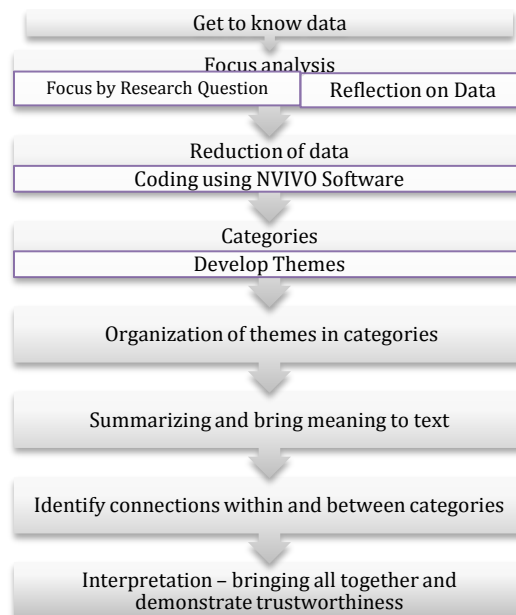
METHODOLOGY

This is a qualitative, exploratory descriptive study. Ethical approval for the study 2370-HDP-ERC-12 was obtained from the Ethical Review Committee, Aga Khan University (AKU-ERC).

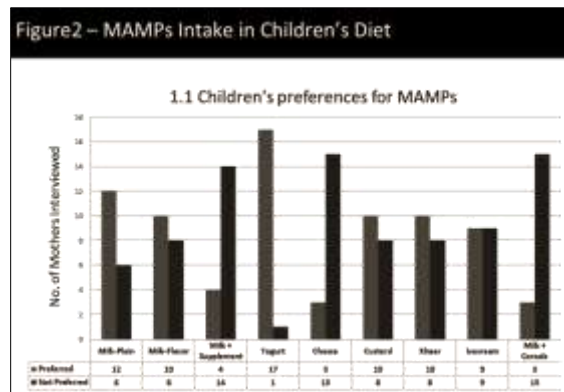
The data was collected from eighteen mothers whose children were 2-5 years of age, from three daycare centers of three different socio economic areas of Karachi. The sample was a convenient and purposive sample. There was a mixed sample of mothers with formal and non-formal education, working and non-working mothers as well as, mothers who live in a nuclear or extended families. Data was collected by IDI's and was transcribed and coded. Thirty three free nodes were generated in NVIVO version 13. These was merged in to twelve categories. Those categories were merged to develop three themes from the data (Fig 1).

FINDINGS

MAMPs intake in children's diet

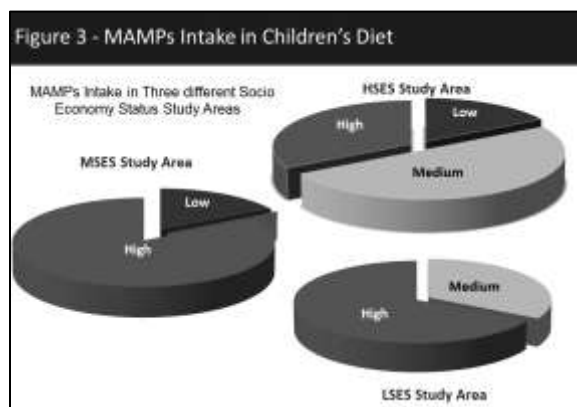


- Children from all three study areas had an intake of MAMPs in their daily diet. However, the type of MAMPs and children's preferences differs considerably (Fig 2).



*Children have more than one preference

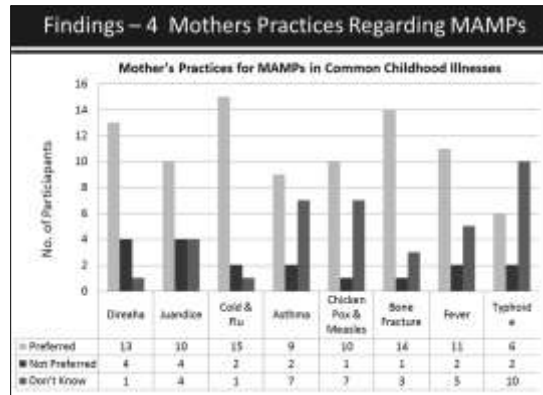
- Majority of mothers in study areas preferred MAMPs which have additional nutritional values, mainly powdered milk which are fortified with different minerals and nutrients or flavored milk available in the market.
- Most participant mothers stated that their children developed interest in particular MAMP due to various television advertisements regarding MAMPs.
- Children's preferences for MAMPs in all study areas were influenced by their peers to some extent. Preferences of children for MAMPs in MSES and HSES study areas were significantly determined by their peer's choices of MAMPs (Fig 3).



- The ethnicity of child's family plays role in determining child's MAMPs intake. MAMPs intake is high in Indian Momanay families.
- The study has also explored that mothers in nuclear family have more opportunities in terms of time and energy for providing MAMPs to their children as compared to mothers in an extended family who were overburdened of their home chores and other responsibilities.
- All the children were taking fat free milk in their diet. Either they take fat free milk or mothers remove layer of cream formed after boiling the milk.

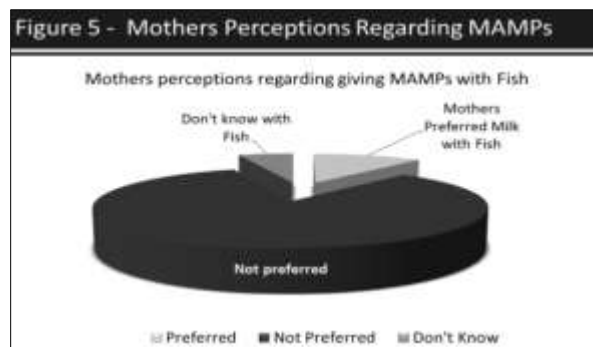
MOTHERS PRACTICES REGARDING MAMPs IN CHILDREN

- The study has identified that those participant mothers who preferred cow or buffalo milk were boiling it for at least once a day for about 15 minutes after the boiling point has reached. For majority, purpose of boiling was to sterilize the milk, to get rid of smell and to improve its taste.
- The study has identified mother's practices regarding MAMPs in various common childhood illnesses and explored that, most of the mothers did not prefer giving milk in diarrhea; instead they preferred giving yogurt or lassi to their children. Few mothers even stop giving milk. While others dilute milk during episodes of diarrhea, this practice is similar in all three areas of study.
- Most of the participant mothers did not prefer giving MAMPs in asthma.
- Most of the participant mothers preferred giving increased amount of MAMPs intake by children during bone fractures.
- Most of the participant mothers did not prefer giving plain milk while child is jaundiced. But they do prefer adding tea or beverages to milk. They also preferred yogurt and lassi (mixture of yogurt and water) in Jaundice.
- All the participant mothers preferred adding tea, honey or turmeric to the milk in flue, cough and cold. However, few mothers did not prefer giving plain milk during winters to their children.
- Most of the mothers from all study areas preferred giving MAMPs to their child in fever (Fig 4).
- The study has identified that those participant mothers who preferred cow or buffalo milk were boiling it for at least once a day for about 15 minutes after the boiling point has reached. For majority, purpose of boiling was to sterilize the milk, to get rid of smell and to improve its taste.
- The study has identified mother's practices regarding MAMPs in various common childhood illnesses and explored that, most of the mothers did not prefer giving milk in diarrhea; instead they preferred giving yogurt or lassi to their children. Few mothers even stop giving milk. While others dilute milk during episodes of diarrhea, this practice is similar in all three areas of study.
- Most of the participant mothers did not prefer giving MAMPs in asthma.
- Most of the participant mothers preferred giving increased amount of MAMPs intake by children during bone fractures.
- Most of the participant mothers did not prefer giving plain milk while child is jaundiced. But they do prefer adding tea or beverages to milk. They also preferred yogurt and lassi (mixture of yogurt and water) in Jaundice.
- All the participant mothers preferred adding tea, honey or turmeric to the milk in flue, cough and cold. However, few mothers did not prefer giving plain milk during winters to their children.
- Most of the mothers from all study areas preferred giving MAMPs to their child in fever (Fig 4).
- All mothers interviewed in LSES preferred giving homemade MAMPs to their children. In HSES area of study; all the mothers says that homemade are good but at the same time they appreciated market made MAMPs as well.



MOTHERS PERCEPTIONS REGARDING MAMPs IN CHILDREN

- 1) It was found that all the mothers have considered that, milk is important for whole life but children should be having good intake of MAMPs in 2 to 5 years of age.
- 2) All the participant mothers thought that milk helps in development of bones and strengthen children's bones. However, few mothers have thought that milk plays role in development of children's teeth, gums and helps in children's physical and mental growth and development.
- 3) Also it was identified that, all the mothers thought that MAMPs do not cause any harmful effects in children. Few mothers considered that Cow milk can cause allergies in children. While all participant mothers, except two, from Sindhi family, were avoiding simultaneous fish and MAMPs intake in their children (Fig 5).



DISCUSSION

The present study has explored that MAMPs intake of children in three different areas of Karachi was considerably remarkable and it was in accordance with 2006's, American Academy of Pediatrics recommendations for requirements, i.e. 2 cups per day of Milk/Dairy for 2-4 years old children (Dietary Recommendations for Children and Adolescents: A Guide for Practitioners. American Academy of Pediatrics Endorsed Policy Statement. Pediatrics, 2006). The P-NNS 2011 has also shown that Pakistani children have good intake of MAMPs (Bhutta & P-NNS, 2011). The survey has also identified that Pakistani children's simultaneous intake of tea with milk diminishes the effects of milk. Whereas, our study shows that mothers of all the children were avoiding giving tea and other beverages to their children and emphasis more on giving MAMPs in their children's regular diet.

The study's data shows that children from all study areas, mainly from HSES study area, were influenced by their peer for selecting MAMPs. They preferred packaged flavored milk and yogurt available in the market. These preferences of children can be attributed to the contemporary life style of children's family. Heather Patrick in his

study regarding various factors affecting children's preferences for different food items has identified that, the trend of convenient foods is on its way and the preferences for foods have been changed due to global modernization. He also explained that the most affected population is of young children(Heather Patrick, 2005).The data also shows that, media has played considerable role in determining and informing children and their adult about various MAMPs available in the market. Mothers in our study preferred their children to watch television and were found contented with television advertisements regarding MAMPs. Mothers also considered that these advertisements are helping them in selecting particular MAMP and informed them about nutritional values incorporated within them. This finding is also appropriately in connection with Coon KA and Tucker KL, who have identified that children who are exposed to advertising choose advertised food products at significantly higher rates than do those not exposed. Purchase request studies have documented associations between number of hours of TV watched and number of requests from the child to the mother for specific food items, as well as the presence of those items in the home (Coon KA, 2004).

The P-NNS, 2011 has depicted that gender bias, low level of mother's education, low socioeconomic status of families within country, are contributing to poor health status of children(Bhutta, 2011). Whereas, the present study shows that all the participant mothers who were formally or non-formally educated, preferred giving MAMPs to their children. They had no discriminations for genders among their children, regarding provision of MAMPs. In fact, mothers from all socioeconomic areas were focusing on children's daily intake of MAMPs. This finding can be attributed to local health services available within mother's community. LHV's in those basic health units were responsible for mother and child health care, and they used to provide information to mothers regarding MAMPs and other food group's intake in children. Also there are such examples available in Pakistan, where children and mother's health status have been improved by providing primary health services to them (Fareeha Ummar, 2003).Moreover, the data has shown that those mothers who were not employed were more frequently preparing milk products such as kheer and custard at home. Thereby, their children are having increased intake of MAMPs per week as compared to employed mothers. This might be due to the increased demands on these employed mothers to meet their responsibilities at home and work and scarcity of time to make milk products at home. It was also found that employed mothers were also prone to select MAMPs for their children which are convenient, easy to handle and having good nutritional values. However, Jennifer Jabs et. al. have also confirmed in their study that employed mothers prioritized feeding their children but wanted to complete meals quickly in order to move on to other tasks(Jabs, A.Bisogni, J.Farrell, Jastran, & Wethington, 2007). The family system of mothers in present study seemed to play a vital role in determining mother's practices regarding MAMPs for their children. It was explored that mothers in nuclear family have more opportunities in terms of time and energy for providing MAMPs to their children as compared to mothers in an extended family who were overburdened of their home chores and other (Jabs et al., 2007) responsibilities. It was also identified that children who belonged to Indian family have increased intake of MAMPs in their diet. Heather Patrick in his review of family and social determinants of children's eating patterns and diet quality; has also concluded that ecology of a child determines the overall health status of a child and has impact on his development. Children's eating patterns are mostly the product of child's own family's ethnicity and practices regarding eating habits and life style. He exclaimed that there is a need to target child, family and community for addressing healthy food intake in their diet (Heather Patrick, 2005). Moreover, the present study has explored that mothers in all study areas were usually giving fat free milk to their children. This was because most of the mothers were using loose milk (cow or buffalo milk) and were used to boil this milk. They usually remove the layer of cream which subsequently formed after milk gets cool. Most of the mothers actually did not have any intention of making the milk fat free. However, there were few mothers who were practiced giving fat free milk to their children.

Those mothers had knowledge regarding effects of saturated fats on cardiovascular health and were relating whole milk intake with children's obesity. This finding was in contradiction with a large sample study by Gianvincenzo Barba. He selected a sample of 884 children and had shown statistically significant inverse association between frequency of milk consumption and body mass in a large sample of children. This association was independent of other possible determinants of body mass, such as age, birth weight, parental overweight, education of parents, physical activity and reported dietary habits. In our population, the prevalence of overweight is significantly lower in children consuming whole milk daily than in those who consumed milk less frequently (Barba, Troiano, Russo, Venezia, & Siani, 2004). Moreover, Mothers perceived that, boiling milk for prolonged period and or for multiple times, they can sterilize and can get rid of the unpleasant smell of it and that they can have a thick layer of milk cream. They usually boil the loose (cow or buffalo) milk for at least 5-10 minutes and even some mothers up to 20 minutes, in order to sterilize it and to get rid of unpleasant odor from it. However a recent study in journal of Pakistan medical association (JPMA) shows that, domestic boiling caused drastic reduction in vitamin levels of loose milk samples. In comparison to this, UHT milk retained high levels of water soluble B-vitamins. Thus it could be envisaged that UHT treated milk provides better water soluble vitamins' nourishment than conventionally boiled milk (Asadullah et al., 2010). The present study has also identified that many mothers do not prefer giving MAMPs immediately before or after their children had fish in their meal. This is because they thought that such combination could cause white patches on the children's skin. Milk is one of the most nutritionally complete foods available (Miller, Jarvis, & LD, 2000), there are many myths relating its consumption that blames milk and dairy foods for a variety of ailments. Many of these myths have been part of the folklore for centuries and are not founded on science. Specifically, in Pakistani parents, there is a concept of cold and hot foods among adults (Bhutta, 2011). This perception was also prevalent in the participant mothers. One of such perception was that milk is a cold food and should be avoided in children with asthma (Bhutta & P-NNS, 2011). A. H. Wijga et al. in a study related to association of asthma and milk fat, has shown that the prevalence of asthma is less in children at age 3, who have consumed at age 2, full cream milk daily (Wijga et al., Thorax 2003). Hence, in preschool children, the frequent consumption of milk fats in diet is associated with reduction in asthmatic symptoms. Therefore, it is worthy to know that myths like this can have even more detrimental effects on general health young children if their nutritious components of diets have been eliminated imprudently and without proper justification. S H Badruddin et al. had identified that feedings were not withheld during diarrhea but changes were made in the nature of foods given (Badruddin et al., 1991). The present study has also shown that, most of the participant mothers did not prefer giving milk in diarrhea; instead they preferred giving yogurt or lassi to their children. Few mothers were even stopping giving milk to their children. While others dilute milk during episodes of diarrhea, this practice is similar in all three areas of study. The mothers were following these practices due to their perception about milk can worsen diarrhea due to its thick consistency and cannot be digested by the child. Few data are available about withholding or continuing feeding and what alterations are made during acute or persistent diarrhea. This practice indicates that several feeding practices may be important risk factors for children's health in Pakistan (Badruddin et al., 1991). The study data indicates that, all the mothers were considering MAMPs as a rich source of calcium. They considered that early onset of milk intake helps in development of life long habits of MAMPs in children. Which they have attributed to, improved bone health and physical activity in childhood and later in adulthood. Heidi et al; identified that risk of fractures in adulthood due to less bone mass increases when women had low intake of milk in childhood and adolescence (Kalkwarf, Khoury, & Lanphear, 2003). Also to quote a very recent study by Kate Birnie et al has shown that childhood milk consumption is associated with better physical performance in old age (Birnie et al., 2012). Nevertheless, the

adolescence and adult bone health depends upon the childhood dietary calcium intake; therefore, it is appreciable that milk being excellent source of most of the nutrient should be included in diet of young children. Also, if there is a notion of pure bone health it is entirely not dependent upon calcium only; in fact it is a multifactorial process. And overall healthy, nutritious diet and exercises are also required in early childhood for achieving healthy bone mass. The studies in Pakistan have not yet shown the role of MAMPs and dietary calcium in bone health and therefore, studies are required to explore the role of MAMPs in Pakistani children's bone health (Birnie et al., 2012; Elwood, 2005; Goulding, Rockell, Black, Andera M, & Williams, 2004; Kalkwarf et al., 2003).

CONCLUSION

The study has shown that majority of the children in three different socio economic areas were having acceptable amount of MAMPs intake in their diet. The quality and quantity of MAMPs in 2-5 years old children's diet are considerably determined by their socioeconomic status, mother's level of education, occupation, ethnicity, media and by children's peer. Mother's perceptions are reflecting in to their practices regarding MAMPs. Most of those practices were resulting in withdrawing of MAMPs from child's diet when children are actually in need of them. Recognizing the MAMPs intake of 2-5 year old children and their mother's perceptions and practices can help researchers, better understanding children's preferences for different MAMPs; this study can also pave the road for further research in this area.

ACKNOWLEDGEMENT

I would like to thank The Aga Khan University- Human Development Programme for giving me the opportunity to attend Advance diploma in Early Childhood Development Course III: Introduction to research in early child development: Methodology, Analysis and Reporting, for Advance Diploma in Human Development (Early Child Development). I would also like to express my sincere thanks to Ms. Ayesha Zahid Khan my supervisor (Nutritionist-Senior Research Officer- AKU & General Secretary- Pakistan Nutrition and Dietetic Society) for her humble & generous round the clock guidance and continuous cooperation throughout my research project and writing this report.

I also acknowledge my deep thanks to Dr. Ghazala Rafique (HDP Director and my Co-Supervisor) and my course director Ms. Seema Laasi, AKU-librarian, learning resource supervisor and AKU-HDP team especially Ms. Haneen Qureshi for their support throughout Course III. Finally, I thank to Almighty Allah for giving me strength to complete my assignment with hard work and dedication and my beloved family and friends for their support and unconditional love which has enabled me to complete this Report with passion.

FUNDING SOURCES

Self-funded study

DISCLOSURES

None

REFERENCES

- A.H, S., Arain, M. A., Khaskheli, M., & Bhutto, B. (2002). Isolation of Escherichia Coli from Raw Milk and Milk Products in Relation. Pakistan Journal of Nutrition, 1(3), 151-152.
- Albala, C., Ebbeling, C. B., Cifuentes, M., Lera, L., Bustos, N., & Ludwig, D. S. (2008). Effects of replacing the habitual consumption of sugar-sweetened beverages with milk in Chilean children. American Society of Nutrition, 88, 605-611.
- Asadullah, Khair-un-Nisa, Tarar, O. M., Ali, S. A., Jamil, K., & Begum, A. (2010). Study to evaluate the impact of heat treatment

- on water soluble vitamins in milk. JPMA, Journal of Pakistan Medical Association, 60:909.
- Badruddin, S. H., A Islam, Hendricks, K. M., Bhutta, Z. A., Shaikh, S., Synder, J. D., & Molla, A. M. (1991). Dietary risk factors associated with acute and persistent diarrhea in children in Karachi, Pakistan. *The American Journal of clinical Nutrition*, vol. 54 no. 54 745-749
 - Barba, G., Troiano, E., Russo, P., Venezia, A., & Siani, A. (2004, Septemeber 12). Inverse association between body mass and frequency of milk consumption in children. Institute of Food Science, National Research Council.
 - Bhutta, Z. A., & P-NNS. (2011). Pakistan- National Nutrition Survey 2011 (National Survey)
 - Birnie, K., Ben-Shlomo, Y., Gunnell, D., Ebrahim, S., Bayer, A., Gallacher, J., et al. (2012). Childhood milk consumption is associated with better physical performance in old age Age Ageing. *Oxford Journals*.
 - Coon KA, T. K. (2004). Television and children's consumption patterns. A review of the literature. *Nutritional Epidemiology, Nutrition Research Center on Aging, Tufts University, Boston, USA.*, 54(55):423-436.
 - Dietary Recommendations for Children and Adolescents: A Guide for Practitioners. American Academy of Pediatrics Endorsed Policy Statement. *Pediatrics*. (2006). American Heart Association. Document Number)
 - Elwood, P. C. (2005). Time to Value Milk. *International Journal of Epidemiology*, 34, 1160-1162.
 - Fareeha Ummar, D. R. Z. (2003). Status of women's health and wellbeing in Northern Pakistan: Aga Khan Rural Support Programme, Pakistano. Document Number)
 - Goulding, A., Rockell, J. E. P., Black, R. E., Andera M, G., & Williams, S. M. (2004). Children Who Avoid Drinking Cow's Milk Are At Increased Risk for Prepubertal Bone Fractures. *Journal of the American Dietetic Association*, 104(2), 250-253.
 - Heather Patrick, P. (2005). A Review of Family and Social Determinants of Children's Eating Patterns and Diet Quality. *Journal of the American College of Nutrition*, Vol. 24, No. 22, 83–92.
 - Jabs, J., A.Bisogni, C., J.Farrell, T., Jastran, M., & Wethington, E. P. D. (2007). Trying to find the quickest way: Employed mothers' constructions of time for food. *Journal of Nutrition Education and Behavior*, 39(1), 18-25.
 - Kalkwarf, H. J., Khoury, J. C., & Lanphear, B. P. (2003). Milk intake during childhood and adolescence, adult bone density, and osteoporotic fractures in US women. *American Society of Clinical Nutrition*, 77-65.
 - Miller, G., Jarvis, J., & LD, M. (2000). *The Importance of Milk and Milk Products in the Diet*. Florida, USA.: (Wolinsky I, editor) CRC Press.
 - Wijga, A. H., Smit, H. A., Kerkhof, M., Jongste, J. C. d., Gerritsen, J., Neijens, H. J., et al. (Thorax 2003). Association of Consumption of Products Containing Milk Fat With Reduced Asthma Risk in Pre-School Children: The PIAMA Birth Cohort Study. *National Institute of Public Health and the Environment*, 58:567–572.