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Original Research Article

COMPLEMENTARY FEEDING PRACTICES AMONG MOTHERS OF 6 TO 24 MONTHS OLD INFANTS' AND EXPLORING POTENTIAL OF ARTIFICIAL INTELLIGENCE TO SUPPORT THEM

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Abstract:

Complementary feeding (CF) should be started after six months to the infants for their growth and development. CF practices amongst the mothers of 6-24 months old subjects were studied and importance and potential of the application of AI for CF in infants were explored from literatures. A mixed study design was used. 190 subjects were selected through stratified random sampling method and proper inclusion and exclusion criteria were followed. Data was collected from mothers of subjects. It was found that 77.60%, infants from 6 to 8 months age group were offered complementary foods with a thin/liquid consistency. 100% subjects fed CF for 1 to 2 times and 16.32% fed for 5 times. 48.42% respondent mothers feeding high calorie food during fever, 44.74% respondents did not give electrolytes/ ORS during diarrhoea and fever. Majority of the subjects drink 120 to 240 ml water daily. It was found that 72.11% participants introduces all tastes and foods to child gradually and slowly in an empty stomach. Only 37.89% participants feed malted food to infants. After studying complementary feeding and it's finding AI applications found to be important for the care takers in terms of CF. AI driven application for CF can be helpful to improve healthy CF practices among mothers to improve nutritional status of infants and monitor their growth and development.

Keywords: *Complementary food, CF practice, age appropriate CF consistency, AI driven applications for CF*

Introduction:

Artificial Intelligence **(**AI) can emphasize its role on infant feeding challenges and can be helpful for caregivers and mothers. 0 to 2 years of age is crucial for mental and physical development. CF is necessary after six months of age. Proper selection of foods should be done, so infants may not suffer with malnutrition problem. Actually, children between the ages of 6 and 23 months have higher nutritional needs per kilogram of body weight for growth and development. To prevent infants from malnutrition (stunting/ wasting) their proper feeding is very important [(13)]. Over dilution of foods/ milk or delayed introduction of CF results in developing the symptoms in malnutrition. There is advancement in technology and AI can offer help to address these challenges and can provide virtual assistance to mothers and caregivers and can provide personalized guidelines to monitor child's growth and development by following proper CF practices, food safety and hygiene practices. All these

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approaches can help to bring traditional child rearing practices, modern nutritional approaches, food safety and hygiene practices together and make mother efficient to make informed decision for their children and take proper care. AI has the capacity of prediction of growth and development pattern, can provide personalized infant feeding practices recommendations and hence it can become valuable in this domain.

Objective: To study CF practices among the mothers of 6-24 months old subjects; and explore and document the importance and potential of the application of AI for CF

Methodology:

Study design and sampling:

Community based cross-sectional study design was used for primary data of real time CF related issues in the community and descriptive design was used to explore importance and usefulness of AI for CF and infants nutrition. Participants that fit particular study-related criteria were chosen for this study using a stratified random sampling technique from Pune city. Determination of sample size for this study was done according to Cochran Formula and 190 sample [(3)] were selected by following proper exclusion and inclusion criteria.

Ethical consideration:

The study's professional ethical standards was verified by the ethics approval committee of the Jehangir Clinical Development Centre (JCDC) in Pune. The Declaration of Helsinki (1964) [(14)] and its revisions, which set forth guidelines for moral medical research involving human subjects, was followed in the course of the study. All participants provided their informed consent before enrolment.

Data collection tool and statistical analysis :

A standardized tool was prepared and interview was taken. For the documentation of AI applications existing literature and case studies on the AI on feeding, nutrition, health and CF were reviewed and documented. The data was analysed and interpreted using statistical techniques. The frequencies and percentages were calculated.

Deliverables:

Results of current CF practices on the importance of AI in bridging the gap between knowledge and practices were shown and discussed.

Reviews:

AI plays an important role in nutrition research. AI is transforming the healthcare industry, including nutrition, and is always evolving [(12)]. AI makes it possible to identify malnutrition early [(10, 11)]. Mobile applications with a health focus are crucial for improved nutritional status. It demonstrated promise for the development of scalable, contemporary self-nutrition monitoring technologies [(4)]. For children to have the right nutrition, it's critical to comprehend how chatbots can be used for breastfeeding and supplemental feeding. One study focused on Feedpal chatbot prototype, it has improved maternal knowledge about breastfeeding through conversational interface, named YUkti (Developed by Wizard-of-oz prototype). It addressed the misinformation and cultural myths, and played a role as a first line support to mothers. It provided tailed feeding advices [(15)]. An Integrated Management of Childhood Illness (IMCI) was developed by WHO and UNICEF. It is systemic approach to reduce mortality and morbidity in children through prevention and cure healthcare strategies. It can play

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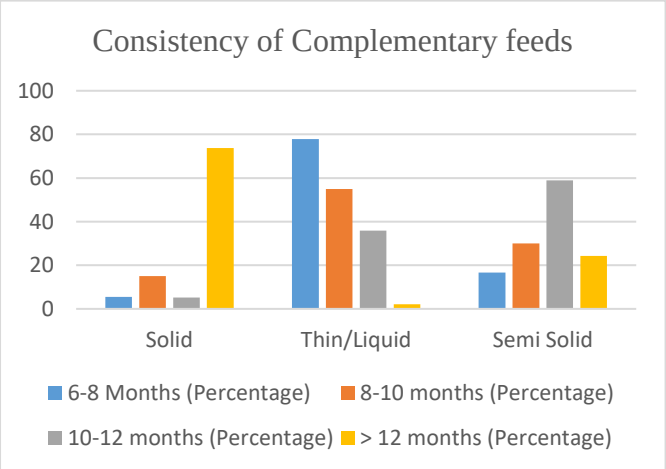
significant role in pediatrics health care [1]. It was found that designers of e tools for new mothers should develop a tool which support, provide authentic information, reliable information help in mitigating challenges [2]. The study found mobile phones' usefulness in delivering nutritional information and guidance for CF practices and health advice to caregivers. Mobile phones through voice-based system and SMS can be used. This method can overcome literacy and language barriers [5, 9]. AI is increasingly used in clinical set ups and decision making. In AI patients' privacy is protected, and enhances treatment plans, which reduces treatment costs.

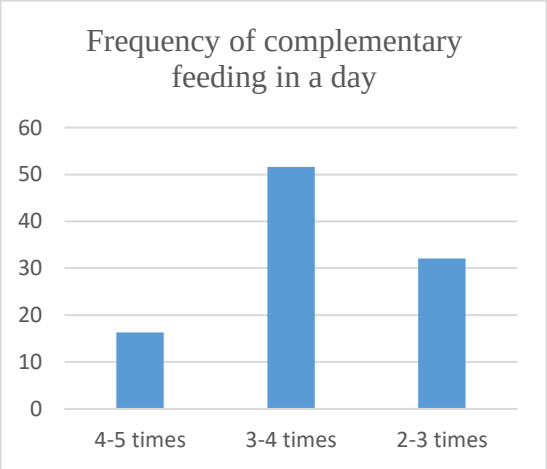
The automated tool (AI) to monitor weight for age growth curve, has the potential to detect SAM. It is an important step to address malnutrition and a model for the advancement of healthcare [6]. ML technique can predict Early Breast Feeding challenges, and outcomes [7].

The study explored the delivering of structured CF. Instructed mothers through computer. It was found and indicated that there was a significant improvement in the knowledge score of the mother in the experimental group. This was correlated with the morbidity of infants [8].

Results and discussion:

Age-appropriate CF consistency and frequency is necessary for growth and development





Figures 1 and 2: Subject distribution based on daily CF frequency and consistency

The infants between the ages of 6 and 8 months, 77.60%, 16.70%, and 5.50 percent were given complementary foods with a thin/liquid consistency, semi-solid consistency, and solid consistency, respectively, as indicated in Figures 1 and 2. 95 infants older than 12 months were examined, and it was discovered that 2.11%, 24.21%, and 73.68% of them were fed complementary foods with solid, semi-solid, and thin/liquid consistency, respectively. 100% of the subjects fed CF one or two times, it was discovered. 16.32% of subjects were fed five times, whereas 51.58% were fed three to four times.

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Table 1: Subject distribution based on the consumption of high-calorie foods and electrolytes/ORS during fever and diarrhoea

Sr. No	Variables	Respondents (n=190)	
		Frequency	Percentage (%)
Feeding high calorie food during fever, like- Sheera, Kheer, Khichdi, Kanji, Porridges			
1	No	21	11.05
2	Sometimes	77	40.53
3	Yes	92	48.42
Giving electrolytes/ ORS during Diarrhoea			
1	No	85	44.74
2	May be/ Sometimes	61	32.11
3	Yes	44	23.16
		190	100.0

Table 1 above demonstrate that 48.42% of the mothers who responded, fed their children high-calorie items during fever. 40.53% fed occasionally, and 11.05% do not.

Of those surveyed, 44.74% did not administer electrolytes or ORS during fever and diarrhoea, 32.11% occasionally did so, and 23.16% did so.

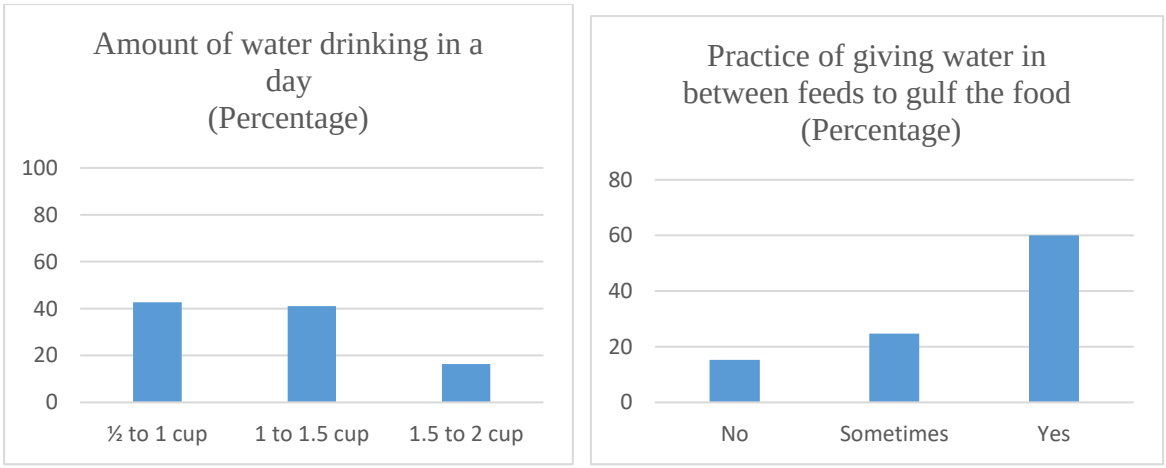

Figure 3 and 4: Distribution of respondents' according to amount of water drinking in a day and practice of giving water in between feeds to gulf the food

According to Figures 3 and 4, most respondents drink between ½ and 1 cup (120 to 240 ml), 41.05% drink 1 to 1.5 cups (240 to 360 ml), and 16.32% consume 1.5 to 2 cups (360 to 480 ml) of water each day. For example, 60.00% of mothers routinely give water to their infants so they can swallow their meal, 24.74% do so occasionally, and 15.26% never do so.

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Table 2: Respondents were divided based on how they typically used the malting process and fed malted porridge to infants

Sr. No.	Variables	Respondents (n=190)	
		Frequency	Percentage (%)
Practice of application of malting process			
1	No	44	23.16
2	Sometimes	94	49.47
3	Yes	52	27.37
Feeding of malted porridge to infant			
1	No	42	22.11
2	Sometimes	76	40.00
3	Yes	72	37.89
		190	100.0

72.11% of participants offered all tastes and meals to children gradually and on an empty stomach, as shown in table 2. 5.79% did not practice it, whereas 22.11% did it occasionally. Malted porridge is fed to infants by 37.89% of participants, occasionally by 40% of participants, and never by 22.11% of participants.

Conclusion:

The majority of respondents were given complementary foods with a thin or liquid consistency for infants aged 6 to 8 months, and the frequency of CF was insufficient, which may have affected their nutrient intake, according to the study's actual CF practices. When they had a fever, the majority of participants avoided giving high-calorie foods. Infants were also not drinking enough water. On an empty stomach, the majority of participants gradually introduced all meals and tastes to the youngsters. In order to address the nutritional needs of infants, AI can offer knowledge about nutrient-rich food sources and techniques for making complementary meals. AI empowers mothers for better nutrition outcomes. Mothers face various challenges in CF. AI can help them to make them aware and informed about nutritionally well-balanced CF. AI can provide tailored CF plans for the child's age, nutritional status, allergies, cultural preferences, and likes and dislikes. It can track feeding practices, evaluate them, and suggest plans for picky eaters. Real-time advice can be provided by AI chatbots. Audio and video can educate mothers, which can be generated through AI. Games on CF can be developed to enhance the learning experience. AI can monitor growth and development. AI is affordable, build confidence in mothers on CF and they can make informed decisions. AI is a computer application performing tasks that require human intelligence and inputs for health, nutrition, and well-being. Now there is an improvement in the healthcare and nutritional care field due to AI applications. This study's information and documentation of the importance and potential of the application of AI help to enhance infant's feeding practices and support growth and development.

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References:

1. *DeRenzi, B., Lesh, N., Parikh, T., Sims, C., Maokla, W., Chemba, M., Hamisi, Y., Schellenberg, D., Mitchell, M., & Borriello, G. (2008). E-IMCI: Improving pediatric health care in low-income countries.* Association for Computing Machinery, New York, NY, USA. *https://doi.org/10.1145/1357054.1357174*
2. *Gibson, L., & Hanson, V. L. (2013). Digital motherhood: How does technology help new mothers? In* Proceedings of the SIGCHI Conference on Human Factors in Computing Systems *(pp. 313–322). Association for Computing Machinery. https://doi.org/10.1145/2470654.2470700*
3. *Khandelwal, S., et al. (2022). Infant and young child feeding practices in an Indian maternal childbirth cohort in Belagavi, Karnataka.* International Journal of Environmental Research and Public Health, 19*(9), 5088. https://doi.org/10.3390/ijerph19095088*
4. *Maryam, Z., Sughra, U., Mumtaz, S., & Hassan, M. (2023). Improving nutritional status of children using artificial intelligence-based mobile application postsurgery: Randomised controlled trial.* BMJ Nutrition, Prevention & Health. *https://doi.org/e000645*
5. *Medhi, I., Jain, M., Tewari, A., Bhavsar, M., Matheke-Fischer, M., & Cutrell, E. (2012). Combating rural child malnutrition through inexpensive mobile phones. In* Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design *(pp. 635–644). Association for Computing Machinery.*
6. *Nel, S., Feucht, U. D., Nel, A. L., Becker, P. J., & Wenhold, F. A. M. (2022). A novel screening tool to predict severe acute malnutrition through automated monitoring of weight-for-age growth curves.* Maternal & Child Nutrition, 18*(3), e13364. https://doi.org/10.1111/mcn.13364*
7. *Oliver-Roig, A., Rico-Juan, J. R., Richart-Martínez, M., & Cabrero-García, J. (2022). Predicting exclusive breastfeeding in maternity wards using machine learning techniques.* Computer Methods and Programs in Biomedicine, 221, *106837. https://doi.org/10.1016/j.cmpb.2022.106837*
8. *Palanimuthu, K., B M, P., Aithal, S., & Jose, N. (2023). Computerized structured complementary feeding instructions on knowledge of mothers of infants and effects on morbidity status of infants.* Zenodo. *https://doi.org/10.5281/zenodo.8078653*
9. *Rigby, M. J. (2019). Ethical dimensions of using artificial intelligence in health care.* AMA Journal of Ethics, 21*(2), 121–124.*
10. *Sander, M. W. J., Bouzembrak, Y., & Tekinerdogan, B. (2024). Artificial intelligence in malnutrition: A systematic literature review.* Advances in Nutrition, 15*(9), 100264. https://doi.org/10.1016/j.advnut.2024.100264*
11. *Smith, C. J., & Wong, A. T. C. (2022). Advancements in artificial intelligence-based decision support systems for improving construction project sustainability: A systematic literature review.* Informatics, 9*(2), 43. https://doi.org/10.3390/informatics9020043*

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12. *Sosa-Holwerda, A., Park, O. H., Albracht-Schulte, K., Niraula, S., Thompson, L., & Oldewage-Theron, W. (2024). The role of artificial intelligence in nutrition research: A scoping review.* Nutrients, 16*(13), 2066. https://doi.org/10.3390/nu16132066*
13. *UNICEF India. (2019). Infant and young child feeding. Retrieved February 17, 2019, from http://unicef.in/Whatwedo/7/Infant-and-Young-Child-Feeding*
14. *World Medical Association. (1964). Declaration of Helsinki: Ethical principles for medical research involving human subjects. Retrieved from https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/*
15. *Yadav, D., Malik, P., Dabas, K., & Singh, P. (2019). Feedpal: Understanding opportunities for chatbots in breastfeeding education of women in India.* Proceedings of the ACM Human-Computer Interaction, 3*(CSCW), Article 170, 30 pages. https://doi.org/10.1145/3359272*

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