Knowledge of Mothers of Infant and effects on Morbidity Status of Infants: Computerized structured Complementary Feeding Instructions

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ABSTRACT

Complementary feeding (CF) to infants is an advancement of steadily familiarizing semi-liquid to semi-solid foods along with mom's milk at the end of 6 months. The objectives were to assess the demographic variables of infants and mothers of infant, to assess the infant's morbidity status. Methodology: Quantitative approach were used to evaluate the experimental and control groups. The design used in this study was Pretest posttest control group. Sample of 500 mothers and mothers of infant included who satisfying the inclusion criteria chosen by simple Random sampling. Obtained written consent from each participant before collecting the data and confidentiality of data were maintained. The collected data were analyzed by descriptive, inferential statistics. Results: Experimental Group mean SD 27.3±1.57, SE-0.83, Control Group mean SD 16.4±2.62, SE-0.52, Effect size 0.7, t value-1.95, Cohen''d' 5.20,. At the end of 12 months among experimental group infants had no illness 97 (41%) were as in control group majority of infants 137 (59%) had illness in which 48 (35%) had exhibited minor illness, 63 (46%) had exhibited moderate illness and 26 (19%) infant's exhibited severe illness. It showed that experimental group infant's exhibited lesser illness compared to control group infants. Conclusion: A further counseling session, health education on complementary feeding were arranged for both the groups of participant mothers who belongs to moderate and inadequate knowledge score in posttest.

Keywords: Computerized Instructions, Structured Complementary feeding, Knowledge, Morbidity status of infant, Mothers of infant.

INTRODUCTION

Complementary feeding is a process of gradually introducing semi-liquid to semi-solid foods along with breast milk at the completion of 6 months till 2 years [1].

"Complementary feeding to infants' is the process of starting when breast milk alone is no longer sufficient to meet the nutritional requirements of an infant's. It should be initiated at the completion of 6 months and it should be age-appropriate feeding as follows, semi liquid, liquid, liquid, semi-solid, solid and soft foods along with breastfeeding [2].

The transition of food pattern will enhance the children growth, which triples the birth weight by the end of the one year [3].

Morbidity is defined as unhealthy physical and mental state of the infant. The first two years of childhood period is very crucial and more prone to infection and illnesses. Common childhood illnesses like fever, respiratory illness, vomiting, diarrhea, dysentery, constipation, worm infestations are having very poor prognosis when the child is with Malnutrition [4].

Every 6 seconds 1 infant is dying by malnutrition. The infant mortality rate of the world-according to the United

Nations 42.09 and as per Word bank is 49.4. In 2015, 4.5 million (75%) of all under-five deaths occurred within the first year of life [6].

World Health Organization reports that mal-nourished children are the important aspect and suffers largely from infection and die from common childhood sicknesses than nourished young children [7].

The UN estimates that 2.1 million Indian children die before reaching the age of 5 year. Four children die every minute due to preventable illnesses such as diarrhea, typhoid, malaria, measles and pneumonia. Every day 1,000 Indian children die because of diarrhea alone. According to UNICEF worldwide statistics (2018), only two fifths of infants' of 0-6 month's age are breastfed exclusively. Only around two thirds are introduced to solid foods in a timely manner. Global Infant mortality rate is 13 deaths / 1000 live births [13], [14].

This study is an educational intervention trial on complementary feeding to enhance the mothers' knowledge, which influence the infants' morbidity outcome in a chosen settings.

Research Questions
1. Developed knowledge assessment tool on complementary feeding is valid and reliable for the target population?
2. Developed Structured complementary feeding instructions will prove as an effective interventional instrument?
3. Does educational intervention on Complementary feeding may decline the morbidity rate of an infant and improve the level of mothers' knowledge?

Objectives
1. To assess the pre and posttest knowledge on complementary feeding among mothers of infants.
2. To assess the pretest and posttest levels of morbidity status of infant on complementary feeding.
3. To find out the correlation between the knowledge of mothers of infant with morbidity status of infant.

Operational Definition

1. Structured Complementary Feeding:
It refers to the instruction systematically planned and organized feeding such as exclusive breast feeding, maintenance of breast feeding, introduction of complementary feeding, responsive feeding, safe preparation and storage , amount of food consistency, meal frequency and energy requirements, food consistency ,nutrients and use of vitamin-mineral supplements for infant, feeding during and after illness, maternal health-food pattern of mother during feeding which will be given as instruction with the help of computer to the mothers' of infant.

2. Level of Knowledge:
It refers to the relevant information of mothers' of infant regarding complementary feeding which will be evaluated through structured questionnaire, Correct responses of mothers' are further classified into adequate(≥76%)moderate (51-75%) and inadequate(≤50%),experts certified.

3. Mothers' of infant:
Mothers' who were eligible and willing to participate and who understands Tamil in the age group of 21-50 years & having infant 3-12 months attending well baby clinic for infant immunization and plan to have all immunization at a Selected Tertiary Care Hospital.

4. Morbidity status:
 Morbidity refers to describe how often a disease occurs among infants' Which includes,
1. Food allergy
2. Loose motion
3. Bloody loose motion
4. Respiratory infection
5. Fever
6. Worm infestation
7. Any other health problems

REVIEW OF LITERATURE

"A study by Swati Kambli, have conducted a study on Mothers knowledge on weaning process in infants, 50 mothers of infants aged 6 to 12 months, pediatric department by using Quasi experimental explorative research with Purposive sampling technique, the study results shows that 42% mothers poor knowledge, 38% average knowledge

and 20% good knowledge. The author has concluded that update the mothers about the existing or current recommendations through education to reduce the mortality and morbidity of infants" [12].

"A study by sasikavitha., have conducted a study on Study of Complementary feeding practices, 50 mothers of infants aged 6 to 12 months, hospital setting, Salem by using Cross sectional study with simple random sampling technique, The study results shows that 62% mothers introduced complementary foods before 5 months, while 36 % introduced at 6 months, The author has concluded that Education & counseling of mothers about complementary feeding will enhance a timely complementary feeding" [11].

"A study by Riyad A, have conducted a study on Factors associated with the early introduction of complementary feeding, 632 mothers of infants 3- 12 months attending PHC In Saudi Arabia. The study results shows that 62.7% of study infants received early initiation of complementary feeding before 17 weeks by using Questionnaire method simple random method, The author have concluded that Public health educational interventions are needed to reduce early complementary feeding" [9].

A study was conducted on Infant at the Age of 6 Months in relation to Feeding Practices, Iron Status, and Growth in a Peri-Urban Community of South Africa concluded that Prevalence of anemia and stunting for the infants were 36.4% and 28.5%, respectively. Multiple regression analysis showed that birth weight was related to combined psychomotor scores as well as parent rating scores 'Length-for-age z-scores were associated with combined psychomotor scores (β = -1.419 (-2.466, 0.373), p = 0.008), as well as parent rating scores (β = -0.747 (-1.483, -0.010), p = 0.047) " [10].

METHODS

Research approach
Quantitative, Evaluative approach was chosen for this study.

Research design
Pretest-posttest control group design was suitable for this study.

Research setting
This research study was well planned and conducted at Selected Hospital in Tamilnadu, India.

Sample and sample size
Infants and mothers of infants the age group from 3 to 12 months and who consistently satisfy the selected inclusion criteria were recruited for this study. Power analysis Formula N= p (1- p) (Z / E)2, sample size of 500 infants and mothers of infants, out of which 250 in to study group and 250 in to control group. Simple random sampling technique was used to recruited the
Participants.

Sample criteria for infants and mothers:
Inclusion criteria;
The study recruits the infants, who were,
- aged from 3 - 5 months,
- one or the other exclusively breast feeding or incompletely breast feeding however not started complementary feeding,
- term /appropriate to gestational age,
- age from 3months to 1year,
- Presenting in the pediatric outpatient department.

The study includes mothers of infants who were,
- Can read, write and understand Tamil or English.

Exclusion criteria;
The study excludes infants, who were,
- critically ill,
- having mal absorption syndrome,
- known genetic anomaly,
- neurological disorder.

The study excludes mothers of infant who were,
- having adequate knowledge pretest score ($\geq$76%),

- fails to give consent for any reason, sick.

Data Collection Procedure

Pre tested structured questionnaire was used to assess the variables and the level of mother's knowledge and morbidity status of infants on complementary feeding on scheduled timings. Data was collected after written consent from each participant. Anonymity, freedom to withdraw from the study at any time during the study and confidentiality were maintained [8].

RESULTS

Mothers' of infant in the group I had a higher Knowledge score, mean and SD 27.3±1.57, SE-0.83, Cohen's'd' 5.20, Effect size 0.7 compared to group II score, mean and SD 16.4±2.62, SE-0.52, t value-1.95, Cohen's'd' 0.50, Effect size 0.1.

Morbidity status of infant's in group I and group II at 9 months were:131 (53%), 41 (18%) infant's had no illness were as 114 (45%), 193 (82%) infant's had illness in which 65 (27%),110 (47%) belongs to minor illness, 43 (18%),61 (26%) had exhibited moderate illness and 6 (2%),22 (9%) infant's with severe illness respectively. Morbidity status of infant's in group I and group II at 12 months were: 224 (91%) 16 (7%) infant's had no illness were as 21 (9.0%), 218 (93%)infant's had illness in which 15 (6%), 86 (37%) had exhibited minor illness, 6 (3%), 89 (38%) had exhibited moderate illness and 0 (0%),43 (18%) infant's with severe illness. Group I infants had a lesser morbidity score than the Group II infants respectively.

The study findings shows that the morbidity status of infant was analyzed at 9 months among group I the majority of infant's 131 (53%) had no illness (Fig.1) were as 114 (47%) of infant's had illness (Fig. 6.7) in which 65 (27%) had exhibited minor illness, 43 (18%) had exhibited moderate illness and 6 (2%) infant's with severe illness.
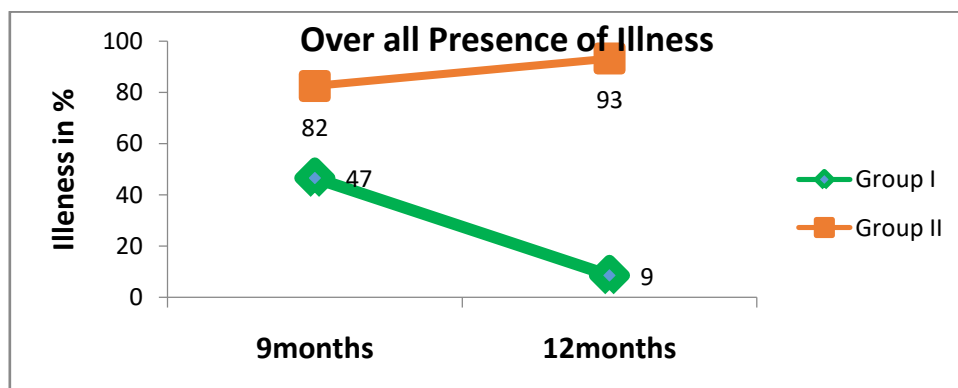

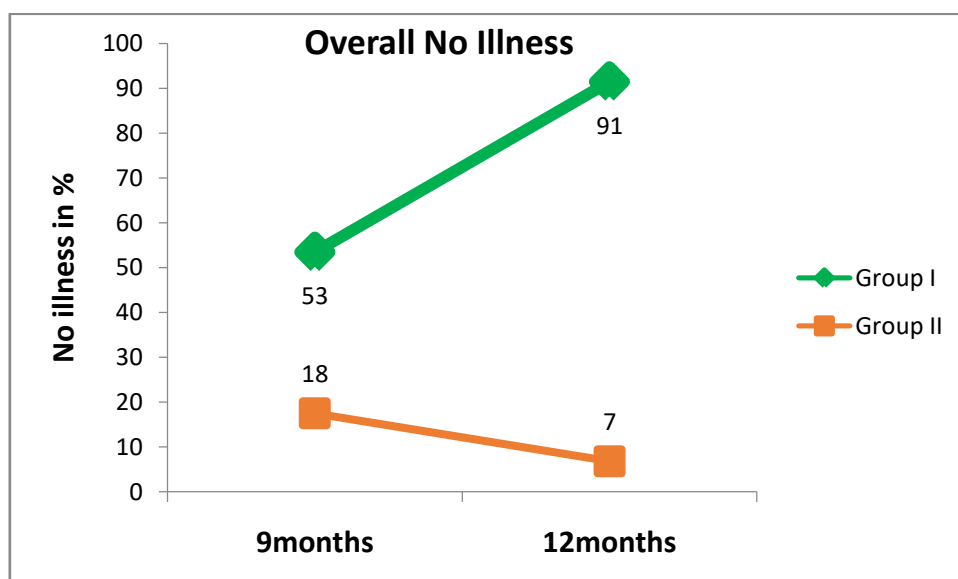**Fig: 1-.Change in illness of infants at different time points**

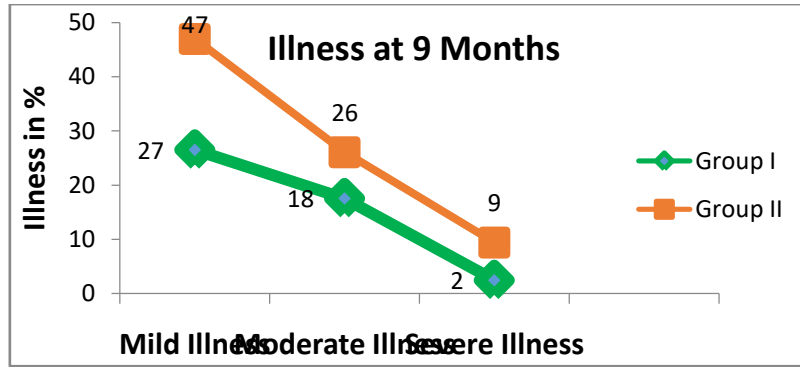**Fig: 2- Changes in no illness at different time points**

Fig: 3- Status of infant morbidity at 9 months

Morbidity status of infant's in group I and group II at 9 months were:131 (53%), 41 (18%) infant's had no illness were as 114 (45%), 193 (82%) infant's had illness in which 65 (27%),110 (47%) belongs to minor illness, 43 (18%),61 (26%) had exhibited moderate illness and 6 (2%),22 (9%) infant's with severe illness, It is clearly denoted in figure(3).

Morbidity Status of Infant's at 12 Months

Morbidity status of infant's in group I and group II at 12 months were: 224 (91%) 16 (7%) infant's had no illness were as 21 (9.0%), 218 (93%)infant's had illness in which 15 (6%), 86 (37%) had exhibited minor illness, 6 (4%), 89 (38%) had exhibited moderate illness and 0 (0%),43 (18%) infant's with severe illness. Group I infants had a lesser morbidity score than the Group II infants, It is represented in figure (4).
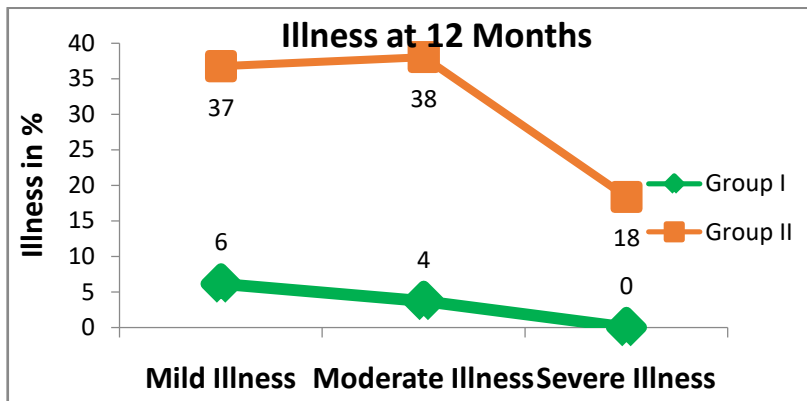

Fig: 4- Status of infant morbidity at 12 months

The decrease in morbidity from the both the groups followed a linear model (Fig. 1-4). The curve fit analysis shows 10.3 fold illness reduction by efficacy of educational intervention is achieved in group I.
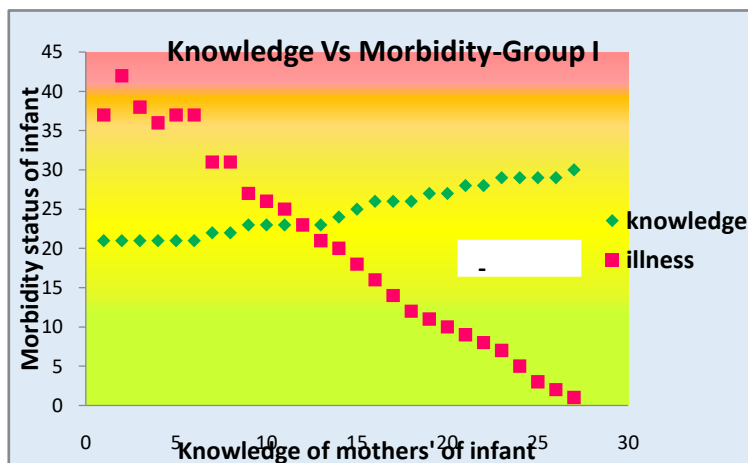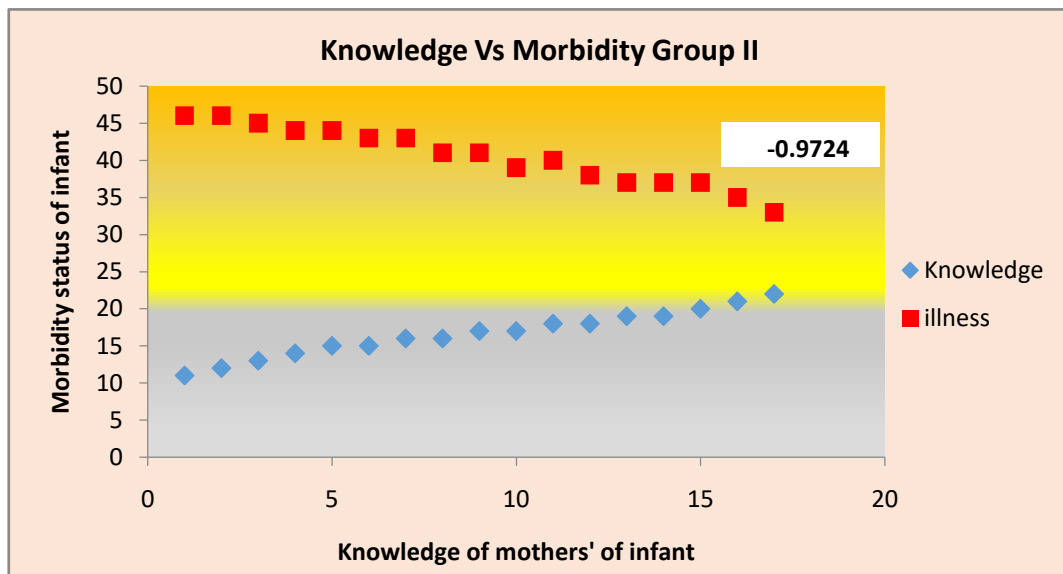

Fig: 5- Correlation between Knowledge of Mothers and Morbidity Status of Infant's in Group 1

Fig: 6-Correlation between Knowledge of Mothers and Morbidity Status of Infant's in Group II

Figure 5 and 6 Shows Correlation between Knowledge of Mothers and Morbidity Status of Infant in Group I and II. Comparison the scores of mothers knowledge on complementary feeding and morbidity status of infants in Group I and II respectively, r= -0.427, r=-0.139. It's clearly stating that improvement in Group I compared to Group II.

SUMMARY

This study showed that the educational intervention i.e. SCFI is effective at increasing the complementary feeding knowledge among mothers' of infant in the target population. The knowledge improvement in the intervention group was 21.7% higher than the control group (p<0.0001), illustrating the educational intervention effectiveness in increasing knowledge on complementary feeding. Mothers' of infant who pass through the intervention achieved good nutritional status for the infants'. The improvements in mothers' knowledge on complementary feeding correlated with the anthropometric and morbidity outcome, supporting that the intervention is an effective tool to cope up with the knowledge required for effective complementary feeding techniques.

CONCLUSION

This study results shows that educational intervention on structured complementary feeding instructions is essential to improve the mothers knowledge, self-confidence and hygienic practices. Mothers' knowledge definitely influencing by reducing the morbidity status of infant's. The study concludes that knowledge of mothers' of infant on Complementary feeding is a peculiar cardinal factor for the growth, reduction of morbidity and mortality especially during the stage of infancy.

RECOMMENDATIONS

- A study can be conducted to assess the role of the care givers in the complementary feeding.
- A study can be conducted in different settings such as the rural and urban area to identify the complementary feeding practices
- A study can be conducted to compare between both genders.
- A longitudinal study can be carried out
- A qualitative time series study may be carried out.

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