SYNOPSIS

1.0 Introduction

Every acute respiratory infection (ARI) in young children is responsible for an estimated 4.1 million deaths worldwide. It is estimated that Bangladesh, India, Indonesia and Nepal together account for forty percent of the global ARI mortality. About ninety percent of the ARI deaths are due to pneumonia, which is usually bacterial in origin. The incidence of ARI is similar in developed and developing countries. The incidence in developing countries ranges between twenty to thirty percent. This is due to high prevalence of malnutrition, low birth weight and indoor air pollution in developing countries. (WHO 1999).

ARI is an important cause of morbidity in the children. On an average, children below five years of age suffer about five episodes of ARI per child per year, thus accounting for about 238 million attacks. Consequently, although most of the attacks are mild and are self-limiting episodes, ARI is responsible for about thirty to fifty percent of visits to health facilities and for about twenty to forty percent of admission to hospitals (WHO, 1999). It is also a leading cause of disabilities including deafness as a sequel of Otitis media (WHO 1995).

According to WHO (2001) estimates, respiratory infections caused about 987000 deaths in India of which 969000 were due to acute lower respiratory infections (ALRI), 10,000 due to acute upper respiratory infection (AURI) and about 8000 due to otitis media. In 1992 the health facility survey in India measured the performance indicators of ARI case management. The survey indicates inappropriate antibiotic use for cough and cold (65%), children with pneumonia not given antibiotic (19%), respiratory rate counted (22%), chest in-drawing checkup (48%) and care taker (mother) knows correct home care (4%). This shows the need for improvement, especially in the area of training, communicating with caretaker and regular monitoring of national ARI control programme.

2.0 Need of the study:

Children constitute the foundation of a nation. Healthy children grow to become healthy adults with optimal physical strength and emotional poise to become useful members of our society and contribute effectively in the nation building process.
In India health of under-five year children is not satisfactory. A.R.I. and diarrhoeal diseases are the major causes of morbidity and mortality in children under five years in developing countries. Of the estimated 125 million babies born each year some 10.7 million do not survive their first birthday, another 4.5 million do not live to see fifth birth day. Out of these 15.2 million deaths, about fourteen million or ninety three per cent occur in developing countries; of which ARI is responsible for about four million annually, 11,000 deaths per day. In the developing countries the total number of ARI episodes in children below five years of age is estimated to be between 500-900 million per year. One out of fifty of such episodes may progress to pneumonia cases will die. The child rearing practices play an important role in determining the health of children. Today teaching about preventive health and health promotion are considered essential components of comprehensive health care. Since “prevention is better than cure”, teaching, giving information and involving the parents in the caring for the sick child will help minimize complication. Studies show that a planned teaching is known to bringing about a change in the existing knowledge and skill however depends to a great extent on the capacity of the individual to understand.

The WHO report (1995) mentions that health education is one of the most cost effective invention. A large number of diseases could be prevented with little or no medical intervention, if the mothers were adequately informed about them and if they were encouraged to take the necessary precaution in time. The educational approach is major means today for achieving changes in health practices and for the recognition of health needs. It involves innovation, motivation, communication and decision-making. The result though slow, are enduring, and sufficient time should be allowed to have the desired change to be brought about.

Health education helps the individual to understand the consequences of their actions either good or harmful. It also indicates how they can adopt certain behavior, which helps in healthy living. Education is expected to provide strength to individuals and societal development of positive attitudes, values along with knowledge and various skills. The major maternal factors responsible for under-five mortality are: illiterate mothers, marriage and child birth before the age of nineteen years, short birth intervals, home deliveries by local dais and untrained relatives. The child factors are associated with under-five
mortality: male children, neonatal period, lack of immunization, communicable diseases, presence of sibling death, lack of medical aid at the time of death, inadequate breast feeding from third day onwards, first birth order, pre-maturity and low birth weight. These maternal and child factors need to be addressed through education to change the value system, which is practiced wrongly.

Health education enhances the knowledge and the skill of the mother about health and illness, about ways of coping and caring for ill health and the use of health services. Unless parents who are in the frontline of clinical management of children with ARI understand the difference between a child with a minor self-limiting illness and a more serious one, which needs treatment, ARI control will not succeed. An effective health education programme needs to be built on existing knowledge and attitudes within the community. Parents are used to dealing with respiratory infections in their children, although some current practices are likely to be harmful while others are beneficial.

Parents need simple, straightforward messages. These messages can be put across in a variety of ways and the health personnel should use the most effective method for teaching. Stories, plays, puppet shows, film shows, songs, leaflet, booklet, modules and manual etc. (ARI news, 1985). Nurses are one of the important health team members. Educating mothers in caring a child with ARI is one of the important tasks of the nurse. Hence the investigator felt the need to develop a self-instructional manual (SIM) on ARI. A SIM would be a practical health education method that provides information to the mothers in caring the children. The investigator felt the need to explore the existing knowledge and practices regarding caring the child with ARI. And process the information needed by the mothers into the SIM. The SIM can be a source of reinforcement to them when it will be given to them. Therefore the investigator undertook the present study.

3.0 Title of the research study

“A study to develop the self instructional manual for mothers in caring the under five year children with acute respiratory infection”.

4.0 Objectives of the study

Phase I

1. To study the prevalence of acute respiratory infection (ARI) among under-five year children.
2. To assess the existing knowledge of mothers regarding ARI among under-five year children.
3. To find out the existing practices of mothers in caring the children with acute respiratory infection.
4. To assess the information need of mothers in caring the children with ARI.
5. To prepare a self-instructional manual for mothers in caring the children with ARI.

**Phase II**

6. To educate the mother regarding ARI by using self-instructional manual.
7. To assess the knowledge of mothers in caring the children with ARI after receiving the education

**5.0 Definition of Terms:**

**5.1 Development:** According to the Oxford dictionary it means to bring of come into existence. In this study it means to prepare a self-instructional manual for mothers in caring the children with acute respiratory infection.

**5.2 Self-instructional manual:** According to World Book encyclopedia Instructional means to give knowledge or to show how to do, to teach, to give directions. Manual: Is the book that helps its reader to understand or use something, or handbook. It is a set of simple written instructions. In the present study it is a set of simple written and pictorial self explanatory directions; regarding caring the children with ARI, which will be used by mothers of the children under the age of five years.

**5.3 Acute respiratory infection:** It is an acute infection of any part of the respiratory tract and related structures including Para nasal sinuses, middle ear and the pleural cavity. The working group of W.H.O. (1985) has classified ARI broadly into two groups i.e. upper and lower respiratory infections. Upper include: Common cold, Pharyngitis and otitis media. Lower include: Epiglotitis, laryngitis, bronchitis, bronchiolitis and pneumonia. In the present study both upper and lower respiratory infections are included.

**5.4 Knowledge:** According to the Oxford English dictionary knowledge means knowing, what is known of person, thing, facts, subject, and sum of what is known to mankind. In this study it refers to the mother's knowledge regarding acute respiratory infection, causes, predisposing factors, signs and symptoms, spread of infection, recognition of early danger signs, management during illness and prevention.
5.5 Practice: According to Oxford English dictionary practice means habitual action of carrying on; repeated exercise to improve skill. In this study practice means how the mothers are carrying on with the care and prevention of ARI in under five children. The actions taken by the mothers in caring the child during illness, in recognition of danger signs, seeking health care facility and preventive measures.

6.0 Significance of the study:
- The study will reveal the existing knowledge and practices of mothers regarding the acute respiratory infection among the under-five children.
- The finding of the study will provide useful clue to implement the practice of planned health education.
- Health personnel can focus their attention on the specific areas of lack of knowledge and unhealthy practices while imparting teaching.
- The instructional manual can be used as a teaching tool to educate the mothers through the nurses. It will be handy teaching material for the busy nurse in the clinical area.
- Education to mothers through Instructional manual will enable repeated reinforcement and will help them to understand the ARI problem better and how to take care of the child and how to prevent the illness and thus will help in reducing the under-five child mortality.

The study will help in finding out the effect of the Instructional manual on mother’s knowledge and practices regarding caring the children with acute respiratory infection.

7.0 Delimitation of the study:
1. Mothers of children below five years of Naigoan Maternity home, health post area (51,482 population) will be included in the study.
2. The mothers those who are willing to participate in the study will be included.
3. The mothers who are able to speak and understand Hindi, Marathi and English language.
4. The study will be conducted in urban area and will not include rural area.
5. The study will include mothers only and not the father and significant others, since mother is more close to the child during illness to care the child. The father may be difficult to contact during study because of job.
6. The practices will not be observed but through the questions the practices of mothers will be found out.
8.0 Research Design: The research methodology used was descriptive survey for phase I study. A descriptive study describes and interprets what it is concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident and it is primarily concerned with the present. Thus this was the most suitable design for this present investigation. The evaluative approach by using Solomon four group design the effectiveness of the SIM was done.

The study was conducted in two phases. First phase is to do the need assessment and based on the existing knowledge and practices of the mothers regarding caring the child with ARI the self-instructional manual will be developed. To find out the existing knowledge and practices the exploratory descriptive survey method is considered as better method to be included in the present study. This helps to explore the existing information.

The second phase is to find out the effect of self-instructional manual on knowledge and practices of mothers in caring the child with ARI. The Solomon four group design is thought to be better research design. It permits the investigator to differentiate many effects. This research design is an extension of the control group design, and it is a refinement of the pre-test post-test control group design. This design helps to prevent the influence of pre test on the post-test scores.

The study was carried out in Naigoan health post area, which is located near Dadar area. The research was conducted by visiting the families. This area is majority occupied by Marathi speaking, middle class families. Majority of them work in police department. Police quarters, police head quarter, ground, BDD old and New Chawls, Kohinoor mill chawl, cloth merchants and some hutment area occupy the Naigoan area.

The sample consisted in the phase I study was 100 mothers and 100 under-five year children. In phase II sixty mothers of under-five year children. In phase I the sample was selected on a systematic random basis to get the sample representation from all the area of Naigoan health post. For phase II sample was selected by simple random technique.

8.2 Tools used for the study:
According to the objectives of the study the tools were constructed. The phase I tool comprised interview schedule to collect the mothers and under-five year child’s data. Phase II tool comprised interview schedule and opinionnaire.
8.2.1 Interview Schedule: Phase I: Tool I: Knowledge Interview Schedule:
The main purpose of the tool was as follows:
1. To identify the existing knowledge and practices of the mothers regarding caring children with acute respiratory infection among under-five year children.
2. To find out the prevalence of ARI among under-five year children.
3. To do the need assessment before developing the self-instructional manual on ARI.
This Tool was divided into five sections:
Section I: Socio Economic Demographic Profile.
Section II: Under Five-Year Child’s Data
Section III: Knowledge Assessment of Mothers Regarding ARI & Caring child with ARI
Section IV: Assessment of Practices of Mothers in caring the child with ARI
Section V: Need Assessment to develop Self-instructional Manual.
8.2.2 Interview Schedule: Phase II: Tool II: Interview Schedule:
This tool was divided into two parts.
Part I: Socio-economic demographic profile.
Part II: Included section I and section II
Section I: Questions related to acute respiratory infection.
In this section there were total ten questions related to acute respiratory infection among under-five years children.
Section II: Questions related to factors influencing ARI.
This section was sub-divided into four sections as follows:
A) Questions related to caring the child during illness: This includes seven questions. The question No.1: When should a child be taken to the doctor for respiratory ailments? This question framing was changed because the response was immediately, whereas the expected outcome was that they should be able to tell the signs and symptoms for seeking the medical help. The question was reframed as follows: What are the signs that you see in your child for taking the child to the doctor for respiratory ailments?
B) Questions related to feeding: Included four questions.
C) Questions related to immunization: This included four questions
D) Questions related to caring ear and nose under the heading of miscellaneous: which included two questions; these questions are important factors in influencing the acute respiratory infection among the under-five year children.

**Tool III: Self-instructional Manual:** This teaching module was used for the intervention 'teaching mothers regarding ARI among under-five year children'. It includes:

1. Acute respiratory infection
2. Anatomy of respiratory tract
3. Respiratory tract illness
4. Causes of respiratory infection
5. Factors influencing acute respiratory infection
6. Signs and symptoms of acute respiratory infection
7. Danger signs of pneumonia
8. Management of acute respiratory infection
9. Treatment
10. Prevention of acute respiratory infection

**Tool IV: Opinion Interview schedule:** This tool was designed to identify the mother’s opinion on the self-instructional manual with regard to the following aspects:

1. The clarity of the content
2. The adequacy of the content of acute respiratory infection
3. The suitability of the pictures in the self-instructional manual
4. The usability of the booklet
5. To identify the overall opinion about the self-instructional manual
6. Need of more information

The tool was later translated into Marathi. Five nursing personnel established the validity of the translated tool. The tool, were tested for content validity and reliability. The tool and intervention plan for the study were prepared after review of literature and suggestions from experts from nursing and medical fields.

**9.0 Data Collection:**

The Phase I pilot study was undertaken on twenty mothers of under-five year children. The mothers and their under-five year child’s data were collected. It was carried out from 25.5.03 to 30.5.03. The phase II pilot study was undertaken on ten mothers. It was
carried out from 16.2.04 to 27.2.04. The pilot study helped to establish the feasibility and practicability of the tool and technique. The data collection of phase I study was done from 2nd June to 28th June 2003. The data collection of phase II study was from 28th Feb. to 6th April 2004.

The research design was descriptive exploratory and evaluative. The study was conducted in two phases. The first phase was descriptive exploratory because the mothers existing knowledge and practices regarding caring the child with ARI was explored. Then based on the learning needs the information was processed and SIM was developed. The SIM was given to the mothers and their knowledge was assessed by evaluative approach by using Solomon four-group experimental research design. This design helps to eliminate the influence of pre-test on the post-test score. The data obtained from phase I and phase II study was analyzed, according to the objectives of the study and presented in the form of tables and graphs. To find out significant difference t test and ANOVA was used.

10.0 Significant finding of the study:
Phase I study Findings:

10.1 Socio-economic and demographic profile:
Majority (89%) of the mothers belonged to the age group between twenty one to thirty years. The religion they belonged was Seventy Five per cent from Hindu, Nineteen per cent from Buddhist and few (6%) from Muslim community. The educational level was moderately high (69%) in primary education, whereas secondary education was Fourteen per cent and seven per cent graduation. Maximum (92%) mothers are housewives. Eighty percent of them have family income per month Rs.5000/-. Chawl system is predominately (76%) seen in Naigo'an area. Majority (74%) belonged to joint family. The small family norm is well accepted in this area. Moderately high (73%) the families had one or two children. The children having ARI majority (86%) of the children were first child.

10.2 Under-five year child’s assessment:

The children belonged from infant group were forty four per cent, toddler were thirty five per cent and twenty one per cent were from pre-school age group. Maximum (92%) of the child’s birth took place in hospital, whereas eight per cent birth took place at home. The birth weight was noted as verbal information given by mother and not verified from the record. Moderately high (62%) of the children’s birth weight was below 2.5 kg. whereas
thirty three per cent of the children were having birth weight above 2.5 kg. Five per cent of the children’s birth weight was not recorded due to home delivery. Maximum children (97%) were born full term and only three per cent were born pre-term babies.

The serious illnesses in the past six months were reported in nine per cent children, whereas maximum (91%) children had minor or no illness history. Only three per cent of the children were admitted in the past six month, whereas out of ninety seven per cent many of them had cold, cough, fever for which the out patient department treatment was taken. Twenty two per cent of the children had fever at the time of survey. The prevalence of ARI showed that moderately high (79%) number of children had one or more than one number of ARI episode in the past six months.

10.3 Findings of mothers existing knowledge regarding ARI among under-five year children:

10.3.1 Knowledge related to ARI: Moderately high (68%) number of mothers mentioned three to four illnesses, which commonly occur during childhood. Fifty per cent mothers do not know the respiratory disease condition that commonly occurs during the childhood. Majority (80%) of the mothers did not know the cause of respiratory infection. Nearly fifty per cent did not know the signs and symptoms of ARI. Cough, breathing problems, runny nose and fever were mentioned common symptoms. The effect of negligence of cold and cough was responded by forty per cent of the mothers saying the child will become more sick, whereas twenty per cent of them said child will have more cough or cough collection. Thirty per cent of the mothers said breathing difficulty and ten per cent said child would have fever. Fourteen per cent of the mothers said if they neglect the cold and cough, which happens repeatedly, can lead to pneumonia. Majority (81%) of the mothers did not know the danger signs of pneumonia, whereas the mothers who knew expressed difficulty in breathing, breathlessness and fast breathing. This indicates breathing problem is considered as a prominent feature as a danger sign of pneumonia, nearly all the mothers (99%) did not know the normal respiratory rate of an adult.

11.0 Factors influencing ARI:

11.1 Caring the child in illness: The mother’s knowledge regarding seeking medical help for respiratory ailments was that maximum (94%) of the mothers said they would seek the medical help immediately. Eighty one per cent of the mothers don’t know about the
medicine that is given to the child having ARI. Fifty per cent of the mothers didn’t know why oil is put in the ear and nose. The remaining fifty per cent gave the reason for putting oil as for cleaning the nose, to keep moist, to prevent cold etc. cleaning the Childs blocked nose nearly fifty per cent said it should be cleaned with cloth. Less than Ten per cent mentioned inhalation, salt water solution drops, medicinal drops and suck with mouth. Fifty per cent of the mothers said child should be put warm clothes. Maximum (67%) of the mothers use different home remedies for common cold and cough. Fifty one per cent of the mothers give a cold compress and do tapeid sponging when the child has fever. Whereas forty one per cent said they will take the child directly to the doctor first. Twenty three per cent mothers know the medicine given for fever.

11.2 Feeding the child: Majority (90%) of the mothers strongly agree that the child should be given breast feed within half an hour after birth. Moderately high (73%) mothers know the commencement of weaning. Majority (77%) of the mothers know the feeding of a one-year-old child. Majority (77%) of the mothers do not know the sources of vitamin ‘A’. Only three per cent of the mothers feel there is no necessity to weigh the child regularly. Whereas maximum (97%) mothers feel the child should be weighed regularly. Majority (86%) of the mothers feel cold food causes cold and cough.

11.3 Immunization of the child: All (100%) the mothers feel that the child should be immunized. Moderately high per cent (66%) of the mothers feel that immunization helps in the prevention of ARI among under five year children. Maximum (89%) mothers know the schedule of giving B.C.G. Fifty per cent of them knew the schedule of DPT; whereas the schedule for measles is known by less than fifty per cent of the mothers. Majority (96%) of the mothers were of the opinion that the child should be immunized with measles vaccine.

12.0 Findings of existing practices related to caring the child with ARI:

12.1 Caring the child during illness: Moderately high per cent of the mothers give a cold compress and tapeid sponging when the child has fever. Fifty per cent of the mothers take the child to the doctor immediately without doing any thing. Majority of the mothers use home remedies for common cold and cough. All the mothers seek medical help when child becomes ill. Majority of them said they seek the medical help immediately for respiratory ailments. Only thirty five per cent of them are able to identify that the child is seriously ill.
Nearly all the mothers do not know to count the breathing of the under-five year child. All the mothers give medicines regularly when the child is sick. Majority of the mothers do not discontinue medicine on their own, when the symptoms disappear. But some discontinue, which is a harmful practice.

Majority of the mothers don't give medication with their own decision, but some do give, which is not a good practice. More than fifty per cent do not give plenty of fluids during cough and cold. Majority of the mothers put warm, cotton and thick clothes to the child when the child has cough and cold. Moderately high per cent of the mothers use cloth for cleaning the blocked nose of the child. Maximum mothers clean the blocked nose correctly. Majority of the mothers put oil in the ear and nose of the child. More often oil is put in the ear than in the nose.

12.2 Feeding the child: Ninety seven per cent of the mothers said they give breast feed to the child when the child is sick. Whereas moderately high per cent mothers said they breast-feed the child if they are sick. Majority of the mothers give supplementary food to the child. Forty five per cent of the mothers do not give adequate diet to the one-year-old child. They do not receive the necessary nutrients for the proper growth and development of the child. Majority of the mothers give warm feed to the child when child has cold and cough.

12.3 Immunization of the child: Maximum children were immunized completely. Fifty per cent of the eligible children for Vitamin A dose were not given. None of them gave all five doses of vitamin A to the children who were eligible for five doses.

12.4 Other related factors influencing ARI: Only two per cent mothers do not give a daily bath to the child. Rest of the mothers give a daily bath to the child. Majority (84%) of the mothers said they take the child regularly for follow up in the health center. But they take the child only for the purpose of immunizing or when the child is sick. Majority (87%) of the mothers keep the window open while cooking. This is to prevent indoor pollution. There was one mother, who was smoking and eighteen per cent of the families in, which someone from the family was smoking. Eighty per cent of the mothers had a habit of covering the mouth while coughing. Majority (91%) of the mothers do not allow their child to play or sleep with one who has cold and cough. This is to prevent the transmission of the disease. Those who allow some said they are helpless because of the joint family less space and with
elders in the home whom they can't refuse to handover the child. All (100%) the mothers feel that health center facility is convenient to them.

13.0 Phase II: Section I:

13.1 Socio economic and demographic profile:

Majority (73.4% to 86.6%) of the mothers belonged to the age group between 21-30 years. Whereas 6.7% to 13.3% belonged to the age group less than twenty years and between thirty one to forty years. None of them were above forty years.

The religion they belonged was Hindu, Muslim and Buddhist. Among these majority (60% to 93.3%) were Hindu, few (6.7%) were Muslim and moderately (6.7% to 33.3%) Buddhist.

Primary level education in girl child is taking hold. The maximum mothers had primary education level, i.e. Gr. I (46.7%), Gr. II (40%), Gr. III (60%) and Gr. IV (80%). The secondary level also was moderately high i.e. Gr. I (40%), Gr. II (53.3%), Gr. III (33.3%) and Gr. IV (20%). Whereas few mothers had graduation, Gr. I(13.3%), Gr. III(6.7%), Gr. II (6.7%).

All (100%) mothers were housewives except one (6.7%) mother from Gr. III had a part time job in nursery school. This Naigoan area majority community is of Hindu, middle class families who believe female should be at home looking after the children and taking care of the home.

The family income group majority (66.7% to 86.6%) is between Rs.3000 to 5000 per month. Moderately (6.7% to 33.3%) belonged from either less than Rs.3000/- pm or more than Rs.5000/- pm

Maximum (66.7% to 100%) mothers lived in chawl whereas one (6.7%) lived in flat and few (20% to 26.6%) lived in Zopda. The houses were congested, very small, no proper ventilation, open drainage, common toilet facility, but had adequate water supply, electricity in the Zopdas. The families were well equipped many amenities such as gas stove, refrigerator, T.V etc.

Many mothers though the gas stove was available still used stove. Majority (46.7% to 86.7%) of them used stove for cooking and heating water purpose. Very few (20%) used only stove for cooking purpose.
Though the trend of nuclear family is very common but in Naigoan area the joint family is seen majority i.e. Gr. I (40%), Gr. II (80%), Gr. III (73.3%) and Gr. IV (93.3%). Because of the joint family trend the number of people living in home majority had five members or more (53.4% to 93.4%). Whereas moderately (6.7% to 40%) belonged to three to four members living in the family.

Number of the children in the family, the trend of having either one or two was moderately high (33.3% to 46.7%) and (3.3% to 53.3%) respectively. Whereas having three children ranged from 6.67% to 26.7% and one (6.7%) family from Gr. IV had four children, this is because of the joint family, two couples staying in one family. Majority of the couples had one or two children. The family planning coverage is good in this area.

13.2 Section II: Mothers Knowledge regarding ARI:
13.2.1 Part I: Questions related to ARI:

13.2.1.1 Diseases of respiratory system: The knowledge before the intervention varied in different groups. The ignorance or do not know was the response, in GR. I it was 46.7%, Gr. II it was 20%, whereas in Gr. IV it was 6.7%. One to two diseases was mentioned by the groups i.e. Gr. I 26.7%, Gr. II 80% and Gr. IV 80%. This shows many mothers know one to two respiratory conditions, which occur among under-five year children. Whereas few mothers from Gr. I 26.7% and Gr. IV 13.3% know three to four respiratory conditions that occur among under-five year children.

In group one after intervention maximum (73.4%) mothers were knowing three to four conditions, 20% were knowing five to six conditions and 6.7% were knowing one to two conditions. Whereas do not know response was nil in the intervention group. Study group, Gr. III in the post intervention showed that maximum conditions known were three to four (26.7%) and five to six conditions by 73.4% of the mothers, whereas in the control group i.e. Gr. II showed no significant difference, therefore they (86.6%) knew one to two conditions whereas 13.3% said they don’t know.

13.2.1.2 Causes of the respiratory diseases: The assessment of mothers knowledge regarding causes of respiratory diseases showed that majority of the mothers i.e. Gr. I (93.3%), Gr. II (86.6%), Gr. IV (100%) did not know in the pre-test, whereas after intervention post-test showed that Gr. I mothers knew (6.7%) one cause, 33.3% per cent knew
two causes and sixty per cent of them told the three causes, Gr. III mothers (26.71%) told four causes, whereas in Gr. II there was no difference in pre-test and post-test answer.

13.2.1.3 Factors responsible for ARI: The mother’s response to factors responsible for ARI was different in each group. Majority (93.3%) in Gr. II did not know whereas the Gr. I and IV mothers (53.3%, 60%) did not know the other factors responsible for ARI. Mothers from Gr. I (46.7%) and Gr. IV (40%) told one to two other factors, which are responsible for causing ARI.

After the intervention in post-test in Gr. I and Gr. III there was a significant difference. In Gr. II there was moderate difference seen i.e. one to two factors were mentioned by 6.7per cent mothers in pre-test and without the intervention they were mentioned by 26.7per cent of the mothers.

13.2.1.4 Signs and symptoms: In the present study Gr. I and IV very few mothers (6.7%) said they don’t know, whereas majority (60%) said they don’t know in Gr. II. There is significant difference seen after the intervention in the study group. In Gr. I all (100%) mothers were able to tell the signs and symptoms more than three, whereas in Gr. III maximum (86.7%) mothers told the signs and symptoms more than three.

13.2.1.5 Danger signs of pneumonia: In the present study the mother’s knowledge in the pre-test showed majority Gr. I (93.3%), Gr. IV (80%), Gr. II (86.7%) did not know the danger signs whereas some Gr. I (6.7%), Gr. IV (20%), Gr. II (13.3%) attempted to mention one to two danger signs.

13.2.1.6 Breathing: The knowledge of breathing differed in each group. The mothers who did not know ranged from 13.3per cent to 46.7per cent before intervention, whereas they knew 100per cent after the intervention in the study group.

13.2.1.7 Fast breathing: In the present study before the intervention all (100%) mothers did not know regarding fast breathing and after the intervention the study group showed increased level of knowledge i.e. in Gr. I 66.7% and in Gr. III it was eighty per cent.

13.2.1.8 Chest in drawing: In the present study all (100%) the mothers from the study group and control group did not know chest in-drawing, whereas after intervention from both the study groups all (100%) the mothers were able to tell about chest in-drawing.

13.2.1.9 Stridor: In the present study none of (100%) the mothers from study group and control group knew about stridor. After intervention from both the study group maximum
(80%) mothers had knowledge regarding stridor, whereas twenty per cent of the mothers did not know even after educating them.

13.2.1.10 Whistling sound in breathing (wheeze): Maximum (73.4% to 93.3%) mothers felt whistling sound in breathing is not a good sign. After intervention all (100%) the subjects from the study group felt whistling sound in breathing is not a good sign.

14.0 Part II: Factors influencing ARI:

14.1 Caring the child during illness

14.1.1 Seeking medical help: In the present study few (6.7% to 20%) mothers said they don’t know. Whereas maximum (60% to 80%) mothers knew one to two signs to seek medical help before intervention. After intervention in the study group, the level of knowledge was increased. Majority (66.7% to 80%) of the mothers mentioned three to four signs, whereas some (6.7% to 20%) mothers mentioned five to six signs, and few (13.3%) told more than six signs.

14.1.2 Remedial measures: The management of the child suffering from ARI knowledge assessment showed that, maximum mothers i.e. Gr. I (80%), Gr. IV (86.6%) and Gr. II (100%) did not know before intervention. Gr. I majority (86.6%) of the mothers told three remedial measures and few (13.3%) mothers were unable to tell the remedial measures. And Gr. III showed that majority (80%) of the mothers was able to tell more than two remedial measures, whereas some (20%) mothers were not able to tell the remedial measures.

14.1.3 Blocked nose cleaning: In the present study before the intervention maximum (66.7% to 93.3%) mothers did know about cleaning the blocked nose, whereas after the intervention there was significant difference seen. in study Gr. I all (100%) the mothers told about cleaning of the blocked nose. And in study group II majority (93.3%) knew about cleaning of the blocked nose.

14.1.4 Clothes to be put to child having ARI: This table indicates before the intervention from Gr. I all (100%) the mothers did not know the type of clothes to be put to the child having ARI, whereas from Gr. II majority (86.6%) of the mothers did not know. But from Gr. IV mothers had knowledge moderately (46.7%). In the study group, after the intervention there was significant difference seen. In group-I level of knowledge improvement occurred among majority (73.4%) of the mothers, and in Gr. III mothers, it
was maximum (93.3%). In group-IV, which is a control group showed there was no difference in pre-test and post-test scores.

14.1.5 Home remedies used for ARI: In the present study the investigator attempted to find out the knowledge of the mothers regarding home remedies to be used in common cold and cough. Don’t know response was given by moderately less (6.7% to 26.7%) number of mothers. Majority (93.3%) of the mothers mentioned one to two home remedial measures. From the intervention group maximum (66.7%) mothers mentioned three to four home remedial measures, whereas none of the group mothers were able to tell more than four home remedial measures.

14.1.6 Knowledge of fever: Before intervention majority of the mothers from all groups, i.e. Gr.I (86.6%), Gr. IV (100%), Gr. II (86.6%) did not know to recognize fever among the under-five year child. They expressed that warm body means fever, warm forehead and sole means fever, whereas few (13.3%) mothers from Gr. I and IV knew about fever. They mentioned the temperature reading. After intervention Gr.I and GR.III showed significant difference, majority (86.6% and 93.3%) respectively responded correctly in the post-test.

14.1.7 Care during fever: The knowledge of the mother in caring the child with fever was assessed. The findings showed that, before the intervention majority (66.7%) of the mothers knew one measure and few (6.7% to 13.3%) of the mothers knew two measures. Whereas some (20% to 26.7%) of the mothers did not know what to do when the child had fever. After the intervention two and more than two measures or modalities, in caring the child was expressed by more (40%) mothers in post-test, than in the pre-test.

14.2 Feeding the child

14.2.1 Breast feeding: Majority (60% to 100%) of the mothers knew the early initiation of breast-feeding i.e. within half an hour after birth. Gr. I, some (20%) mothers and from Gr. II 40% of the mothers did not know the correct answer, though they attempted to mention the answer.

14.2.2 Exclusive breast-feeding: Before intervention, majority of the subjects from Gr. I (60%), Gr. IV (53.34) and Gr. II (73.34) did not know the duration of giving exclusive breastfeeding. Whereas after intervention maximum (mothers from Gr. I (100%) and Gr. III (93.34) knew the correct duration of exclusive breast feeding.
14.2.3 **Weaning:** The investigator found that most i.e. Gr. I (73.3%), Gr. IV (40%) and Gr. II (73.3%) of the mothers did not know, whereas after the intervention there was significant change in the post-test scores among the mothers of Gr. I (100%) and Gr. III (93.3%). This shows mothers need education in child nutrition.

14.2.4 **Sources of Vitamin A:** Most, (Gr. I 60%, Gr. II 80%, Gr. IV 80%) mothers did not know the sources. But some (Gr. I 33.3%, Gr. II 13.3%, Gr. IV 13.3%) did know at least one source.

14.3 **Immunization of the child:**

14.3.1 **Role of immunization in prevention of ARI:** Majority (73.3%) of the mothers from Gr. I did not know before intervention, whereas in Gr. IV (55.3%) & Gr. II (20%) mothers did not know moderately. The intervention had influence in improving the knowledge. From the study group all (100%) responded positively after intervention.

14.3.2 **Immunization Schedule:** The mother's knowledge regarding immunizing the child for BCG, DPT, & Measles at correct age. The mass media and IEC activities regarding child immunization and the target of 100% immunization of under-five year children (Govt. of India) has created a general public awareness hence many mothers knew about the BCG, DPT & Measles, to immunize the child with these vaccine. Majority (86.6 to 93.3%) of the mothers before intervention knew regarding BCG immunization. This is because when a lady delivers the baby, the child is immunized for BCG on the next day or before discharging the mother from the hospital. Hence, they are aware about the BCG immunization.

D.P.T. Three doses are given as primary immunization at the age of six weeks with four weeks of gap, second dose and four weeks gap, then, the third dose is given. And a booster dose is given at the age of eighteen months. The mothers did not know the DPT vaccination age moderately (40 to 46.7%) whereas few (20 to 53.3%) did not know about measles vaccination.

14.4 **Putting oil in the ear and nose:** Some mothers (20 to 60%) strongly feel that the oil should be put in the child’s ear, whereas 6.7 per cent to forty per cent feel oil should be put in the nose. Whereas more than fifty per cent said oil should not be put in the ear and nose, which is already discussed in phase I study.

15.0 **Section III: Opinion regarding self-instructional manual**
15.1 Content clarity: All (100%) the mothers were of opinion that the content of the SIM was clear and easy to understand. The simple clear statements become easy to understand. The known language helps the subjects to understand the concept more clearly. They appreciated the management table, which is easy to understand at a glance. One mother expressed that ARI word in Marathi is difficulty or doesn’t correlate easily to respiratory diseases. But as we go through the SIM we understand about it.

15.2 Adequacy of the content: All (100%) the mothers felt that the content of the SIM was adequate. This may be because the investigator went from simple to complex information. The beginning of the SIM was with what is ARI; to understand various diseases of respiratory system the picture of structure of respiratory system was shown. Then the cause of the disease and other factors that influence ARI were discussed. Then the signs and symptoms of ARI were listed. The danger signs of pneumonia were discussed in detail by explaining each sign and how to see that sign in the child. After this the management of ARI with classification was explained in the chart. The medication, diet, home remedy and fever management was explained in simple terms. Lastly for the prevention of ARI the do’s and don’ts were discussed in detail. Thus the SIM covers all the information in detail; hence it is adequate in the content.

15.3 Suitability of pictures to the content: All (100%) the mothers felt that the pictures used in the SIM were suitable to the content.

15.4 Usefulness of SIM: All (100%) the mothers were of opinion that the SIM is useful to the mothers. The information given can be real and made use of it in the day-to-day practice when one has an under-five year child. Hence the mothers feel that this SIM is useful which gives in detail the information and simple instructions regarding caring the children with ARI.

15.5 Overall opinions: The opinion regarding developed SIM received ninety per cent very good and good remark whereas ten per cent felt this as a satisfactory attempt.

15.6 Suggestions to include the information: The majority (80%) of the mothers did not suggest any addition of information to SIM, whereas twenty per cent of them said they feel other than ARI information on other topics also should be given to the mothers such as immunization, child diet, prevention of illness, diarrhea, new born care and child rearing practices. All (100%) felt the SIM on ARI is adequate in the content but in addition they
suggest other topics along with ARI also should be given to them. They appreciated the attempt of SIM on ARI and they feel such information should be given on all the abovementioned topics. This is out of the scope of this present study but such attempts can be done and simple leaflets, booklets can be a great help in caring the child.

16.0 Section IV: Testing of the hypothesis of the study:

16.1 Testing hypothesis 1: The null hypothesis states that the populations mean of post-test scores of study groups and control groups are same and there is no significant difference. This is tested by using one factor ANOVA, F test procedure for four groups with equal sample size.

The significance of differences between means derived from uncorrelated groups, i.e. Study group and Control group. The variance attributed to the intervention or the variance among the four means, and the variance arising from individual differences within the four groups. To determine whether the group means differ significantly the ANOVA was computed. Tests of differences between the groups were tested by use of ‘r’ test. For df = 56, t.05 = 2.66 (Table D) t.01 = 2.01, SED = 0.86.

The means of the four groups range from 21.93 to 9.13, and mean differences from 12.77 to 0.48. To determine the significance of the difference between two selected means we compute at ratio by dividing the given mean difference by its SED. The resulting t is then compared with the t in Table D for fifty-six df. A more summarized approach than this is to compute that difference among means, which for fifty six df will be significant at the .05 or the .01 levels and check our differences against these standards.

From Table D for fifty-six df, a t of 2.66 is significant at the .05 levels; and a t of 2.01 is significant at the .01 levels. Since t = mean difference/SED, we substitute 2.66 for t in this equation and 0.86 for SED to find that a difference of 2.28 is significant at the .05 level. And we substitute 2.01 for t in the equation to find that a difference of 1.72 is significant at the .01 levels. Four means will yield six differences. It is clear that approximately four differences are significant at .01 level and remaining two differences are non significant. The largest difference is 12.77 and the smallest is 0.48. The difference between the study group and the control group shows that the intervention of giving the SIM to the mothers has improved the knowledge scores of the mothers. Hence this null hypothesis is rejected.
16.2 Testing hypothesis 2: The null hypothesis states that there is no significant difference between the pre-test and post-test scores achieved by the mothers from the study group (Gr. I). The technique used to test this hypothesis is the paired t test. The result shows the significance of the scores difference in pre-test and post-test, which is given to the mothers by using intervention i.e. SIM. The calculated \( t = 17.3 \), is greater than the table value. Table D value df fourteen at .05 levels is 2.14 and at .01 levels is 2.98. The computed value is greater than the table value hence there is significant difference. Thus \( t \) is significant at 0.05 levels. Therefore null hypothesis is rejected.

16.3 Testing hypothesis 3: The null hypothesis is stated that there is no significant difference between the pre-test and post-tests scores achieved by the mothers from the control group.

The technique used to test this hypothesis is paired t test of correlated group. SD\(_D\) = 1.444, SEM\(_D\) = .372. The \( t = .38 \). The calculated \( t = .38 \) is less than table value. The Table D values for df 14 is at .05 level = 2.14 and at .01 level is 2.98. The computed value is less than table value hence there is no significant difference at both the level (\( P > .01 \) & \( P > .05 \)).

16.4 Testing hypothesis 4: The null hypothesis states that there is no significant difference in the post-test scores achieved by the subjects from the two study groups.

To test this hypothesis the uncorrelated group t test was employed. The SD = 1.41, SED is 0.52 and the computed \( t \) value is 1.94. The \( t \) value is not significant at .05 and .01 (\( P > .01 \) & \( P > .05 \)) both the levels. Hence it can be calculated that SIM (independent variable) and education has brought the similar change in both the groups. The influence of pre-test in the post-test scores was not observed statistically in study group one.

The knowledge assessment of both the group was done ten days after giving as the education and SIM. The study group (Gr. I) was pre-tested for knowledge regarding ARI and caring child with ARI. After the pre-test the mothers were given education through SIM and SIM was handed over to them, whereas the other study (Gr. III) was not given the pre-test. But given the education and SIM, and then post-test was taken. The Solomon four group design helps to eliminate the influence of pre-test to the post-test scores, hence one control group and one study group don’t have pre-test. In the present study the influence of pre-test to the post-test scores did not occur. Therefore the null hypothesis is retained.
16.5 Testing hypothesis 5: The null hypothesis states that there is no significant post-test scores difference between the two control groups. To test this hypothesis, an uncorrelated group \( t \) test was employed. The SD is 1.62 and SED is .59 and calculated \( t \) value is .18 \((p>.01)\), which shows no significant difference in the post-test scores of both the control groups. This is because the mothers did not receive the SIM. Therefore we retain the null hypothesis of no significance difference between the post-test scores of both the control groups.

16.6 Testing hypothesis 6: The null hypothesis states that there is no significant difference between the post-test scores gained by the subjects from study group and control group without receiving the pre-test.

To test this hypothesis a \( t \) test technique was used. The mean score of the study group is 21.93 and the mean score of the control group is 9.13. The summation of the square of mean of mean difference was computed in order to calculate standard deviation. The computed \( t \) value is 25.7, which is greater than the table value \((P<.05)\) and \((P<.01)\) hence there is a significant difference between the post-test mean scores of the subjects from study group and control group.

17.0 Nursing implications:
The findings of the study are valid and relevant in the field of nursing. The implication of this study could be discussed under four broad areas, namely nursing service, nursing education, nursing administration and nursing research.

17.1 Nursing service: Nurses play a vital role in delivery of the health services in urban and rural areas. They are in the frontline in the implementation of C.S.S.M. programme, which includes the management of ARI among under-five year children. The female health worker at sub-center does early detection of the case of pneumonia and treats the mild cases and URTI cases and refers the sever cases immediately. The nurse at PHC takes care of the ARI cases with the help of doctor at PHC. The nurses at rural hospitals manage the pneumonia cases under the guidance of paediatrician. The nurses from sub-district and district hospital take care of sever pneumonia and URTI cases admitted. The super speciality and children hospitals nurses take care of seriously ill ARI cases.
The nurses in OPD and health workers in villages they educate the mothers about the prevention of ARI. They immunize the child with BCG, DPT, Measles vaccine. They insist about breast-feeding, weaning, home remedy, identifying danger signs of pneumonia etc.

Nurses can educate the mothers in well baby clinic regarding child nutrition, prevention of ARI, regular follow-up of the child, immunization etc. in antenatal OPD about mothers diet, prevention of LBW baby, importance of early initiation of breast-feeding, exclusive breast-feeding, keeping baby warm etc. Nurses are very busy in I.C.U., wards, OPD hence they can make use of self-instructional manual to educate the mothers. Thus the nurse can play role in prevention and caring the child with ARI.

17.2 Nursing education: Nursing education prepares the nurses through basic nursing course for effective delivery of nursing services to the patient either in the hospital or in the community setup. Hence education plays an important role in imparting knowledge, providing learning experiences, placement in the clinical area to develop skills and attitude among the nurses to work as professional nurse.

After completion of basic nursing education an additional peadiatric short term course is also provided so as to make the nurse more knowledgeable and skillful in caring the children. The nurse educator can make the nursing students and the health personnel aware about the magnitude of the problem of ARI, and the factors influencing ARI. They can play a key role in motivating the nursing personnel in prevention of ARI. The nurse educators through in-service education can educate the nurses regarding caring the children with ARI. The nurse educators can help the students to develop different teaching strategies to educate the mothers about ARI.

17.3 Nursing administration: Health education can save many lives. Educating mothers is one of the most cost effective invention. A large number of diseases could be prevented with little or no medical intervention if the mothers were adequately informed about them and if they were encouraged to take the necessary precaution in time. The educational approach is a major means today for achieving changes in health practices. The result though slow, are enduring and sufficient time should be allowed to have the desired change to be brought about. Therefore the nurse administrator should invest more budget in preparing informational booklet, instructional manual, leaflet so as to educate the mothers. The separate room in the ward and OPD for educating the mothers with film show, different
models, demonstration, charts, posters, white board, can be used. All these efforts are, for “Prevention is better than cure.”

17.4 Nursing Research: To increase the knowledge base of the nursing discipline and to provide more effective, efficient and compassionate care, nursing research should be undertaken. Research in nursing is increasing because nurses are directly accountable for their practice. Experimental and quasi-experimental studies can give the objective evidence for practice. Exploratory descriptive studies will help in exploring the existing facts based on which nurse can plan, modify the care, and adopt teaching strategy.

Research is urgently needed to develop new and improved methods for the prevention and treatment of ARI. The results of the present study have opened up avenue for further studies. The specific areas for research are recommended under the heading of recommendations.

17.5 Preventive Medicine: In any community, mothers and children constitute a priority group. In sheer numbers, they comprise approximately seventy percent of the population of the developing countries. In India, women of the childbearing (15-44 years) constitute nineteen percent and children under fifteen years of age about forty per cent of the total population. Together they constitute nearly fifty nine per cent of the total population. But virtue of their numbers, mothers and children are the major consumers of health services, have whatever form.

Mothers and children not only constitute a large group, but they are also a “vulnerable” or special-risk group. The risk is connected with childbearing in the case of women; and growth, development and survival in the case of infants and children.

18.0 Suggestions:
1. Mothers should be given knowledge regarding the common respiratory conditions that occur during childhood
2. Mothers should be told about the causes of respiratory diseases.
3. Mothers should be told about the factors that influence ARI among under five year children.
4. Majority of the mothers know few symptoms of ARI but they must be taught how to recognize the danger signs of pneumonia.
5. Mothers should be taught to count breathing in the well baby clinic or when they bring their child for immunization.

6. Mothers should be shown the video film to show fast breathing, chest in-drawing.

7. Mothers should be educated regarding wheeze because majority of the mothers feel whistling sound during breathing is normal.

8. Mothers should be made to understand when their child needs medical help and when only requires home care. Mothers should be explained about remedial measures of ARI.

9. Mothers should be taught to take temperature with thermometer so that she can check temperature and will know whether child has fever or no.

10. Mothers should be shown the demonstration of cleaning of blocked nose.

11. Mothers should be taught in the mother’s craft clinic regarding the cloths to be put to the newborn infant and when child has ARI during childhood.

12. Early initiation i.e. within half an hour after birth and exclusive breast-feeding for 4 to 6 months must be stressed during Antenatal check up.

13. Though the mothers know the commencement of weaning but the weaning should be displayed in the health post so that when they come for immunization they can see it. They should be shown the demonstrations of some of the weaning foods so that they can practice.

14. Mothers should be given education about importance of vitamin A and the various sources of vitamin A.

15. Mothers immunize the child but they should be told why the child is immunized. The role of immunization in prevention of ARI should be explained to them.

16. Mothers should be explained the harmful effects of putting oil in the ear and nose of the child. The posters can be displayed in the Antenatal clinic and immunization clinic.

17. Mothers appreciate the written material, instructions; hence they should be provided leaflet, booklet, module, and instruction manual to the mothers regarding child-care, common practices, child nutrition, immunization etc.

18. Regular health education programme should be conducted in the antenatal clinic and paediatric OPD of PPC center.

19. A well baby clinic or under-five clinic must be organized and regularity of that clinic should be seen by the municipal authority in every maternity home.
19.0 Recommendations:

1. A similar study can be conducted to assess attitude and practices of caregivers on exposing them to self-instructional manual.

2. A follow up study can be conducted to evaluate effectiveness of the instructional manual in retention of knowledge.

3. A similar study may be planned to develop an educational intervention for non-literate caregivers.

4. A comparative study can be taken in urban and rural are to find out the effectiveness of the self-instructional manual.

5. An evaluative study can be conducted to assess the services rendered by various health personnel regarding ARI.

6. The study should be done to assess the relationship of variables and the knowledge and practices of mothers.

7. Similar study should be done on a larger scale.

8. A comparative study can be undertaken to see the difference between urban and rural slum mother's knowledge and practices in relation to ARI.

9. Some study can be done as a hospital based study.

10. Various education methods can be used to create awareness among mothers regarding ARI and can be tested for its effectiveness.

11. A comparative study could be undertaken between municipal, Government and private hospitals to see if there is any significant difference in the information need and information received by the mothers.

12. A longitudinal study can be done to see the impact of teaching through booklet, module, SIM in knowledge and practices regarding caring the child with ARI.

13. Effectiveness of teaching and ARI episode: A prospective follow up study from birth to five year can be done.

20.0 Epilogue:

The mothers were full of gratitude that the information and education they needed would be provided in the form of an instructional manual. They were very co-operative and interested in the study. They said they would always be able to refer the SIM.
The study posed a lot of challenge and provided long experiences. At the end of the study, the investigator felt a sense of achievement in furthering her personal and professional experiences and also in helping the mothers in caring the children with ARI.

The study brought into focus the need for information for the mothers in caring children with ARI. The role of the health personnel in imparting education to the mothers in caring their children is very vital. Most of them requested a copy of Self Instructional Manual for reference to their friends and relatives.

21.0 Conclusion:
Health for all will be achieved by removing misconceptions, ignorance and unhealthy practices through education. Before beginning any health education the existing knowledge and practice need to be assessed. We create awareness of health needs and problem, which leads to motivation. Motivation helps the individual to take interest, evaluate the information that is received. Finally the individual decides to adopt, and is convicted to put the information into action. After assessing the existing knowledge and practices regarding ARI, the investigator found that the mothers were lacking in the knowledge and practices.

Hence the SIM was developed and was given to the study group. The significant knowledge difference was seen in the study group. SIM was an effective teaching tool in improving the mothers knowledge regarding caring the children with acute respiratory infection. All the mothers appreciated the SIM. They felt the content was adequate, and the use of pictures, were appropriate. They felt the SIM was useful for the mothers of under five children. The overall opinion of SIM was rated by majority of the mothers as very good.

The SIM is a very good tool to the busy nurse to educate the mothers regarding caring the children with ARI. It is handy and can be handed over to the mothers to read. It can be a good source for reinforcement to the mothers by repeatedly going through it.