



CHAPTER II

LITERATURE REVIEW

The study on participation in the Infection Control (IC) development of Dokkhamtai hospital, Phayao province was based on the following theories and studies.

- 2.1 Participatory Action Research
- 2.2 Focus Group Discussion
- 2.3 Infection control in community hospital
- 2.4 Participation
- 2.5 Related research
- 2.6 Conceptual framework

2.1 Participatory Action Research (PAR)

Definition of PAR

PAR is a qualitative research methodology in which people from the organization or community participate actively with the professional researcher throughout the research process from the initial planning to final interpretation of the results and discussion of their action implications (Whyte, Greenwood & Lazes, 1991)

In PAR, “Insider” (local participants) and “Outsider” (the professional researcher) collaborate in creating together a “Local Theory” that the participants test

out by acting on it. In PAR, “all relevant stake-holders do what only researchers usually do” (Elden & Levin, 1991)

Using PAR model means “people with different power, status, influence and facility with language come together” to work on a common problem. (McTaggart, 1991)

Empowerment

Empowerment is “a social action process that promotes participation of people, organization, and communities in gaining control over their lives in the community and larger society” (Wallerstein & Bernstein, 1998). Empowerment includes group processes aimed at increasing political and social consciousness for self-determination and is designed around a continuous cycle of reflections and actions.

Table 2: PAR as the union of Participatory research and Action research (Stein,1997)

Participatory research	Action research
Emergued from the work with Oppressed people in developing countries	Emergued from a need for change through consensus in industries in developed countries
Based on Paulo Friere’s theory of freeing (theory of empowerment education) Listen dialogue-action	Based on Kurt Lewin’s change theory Unfreezing-changing-refreezing
Concerned with problem of equity, self reliance, oppression	Concerned with the consensus for action
Focussed on community analysis and developing theory	Implementing theory for improving practice
More participation and so more empowering	Less participation and so less empowering
Gaining knowledge for solving problem	Implementation of action for problem solving

Characteristics of PAR:

1. Problem centered and action oriented
2. Facilitator commits for the betterment of the study population
3. Collaborative: mutual learning, and understanding
4. Respects for people's experiential knowledge
5. Empowering

Principles of PAR

1. Reflexive critique: Using various personal experiences in analyzing and making judgement or arguments
2. Dialectic critique: Concerned with the reality and interpreted in terms of the social context
3. Collaboration: Taking everyone's viewpoint
4. Risk disturbances: Submitting view points for critique & understanding of own shortcomings, weaknesses
5. Plural structure: Group effort
6. Transformation of theory into practice: Theoretical reflection is used to explain practical action and in turn reflection of practical action leads to question about theory.

Steps of PAR

PAR is an open cyclical process consisting of 4 steps:

1. Planning: Includes issue selection, planning action, and preparing resources e.g. training, collection of materials etc

2. Action implementation: including progress monitoring
3. Observation: evaluation
4. Reflection

Factors to be considered in using PAR

1. Trust between the facilitator and the participants
2. Facilitator must give up some degree of control over the research
3. Symmetrical communication
4. Needs quantitative and qualitative techniques of data collections and verification of data through traingulation
5. Full participation from beginning to end.

Benefits

1. Useful for solving multi-factorial problems
2. Broader participation leads to stronger consensus
3. Empowers community and develops self-reliance
4. Mobilizes people for community development
5. Suitable for exploring deeply rooted social problems
6. Extension of knowledge through development and testing of theory
7. Research result is immediately used for collective action for the resolution of problem
8. Active involvement of participants throughout the process enables them to develop self-confidence

9. Leads to better understanding of the situation through sharing of experiences and viewpoints
10. Developing a feeling of accountability and ownership

Limitations

1. Difficulties to generalize the findings
2. Needs more than one techniques of data collection to reach to conclusions
3. Requires long time to complete the study
4. Difficulties in coming to concrete decision
5. Issues of credibility and objectivity:
 - through triangulation
 - interpreting the data with the group
6. Time consuming data analysis
7. PAR may take longer time than other research

Ethical considerations

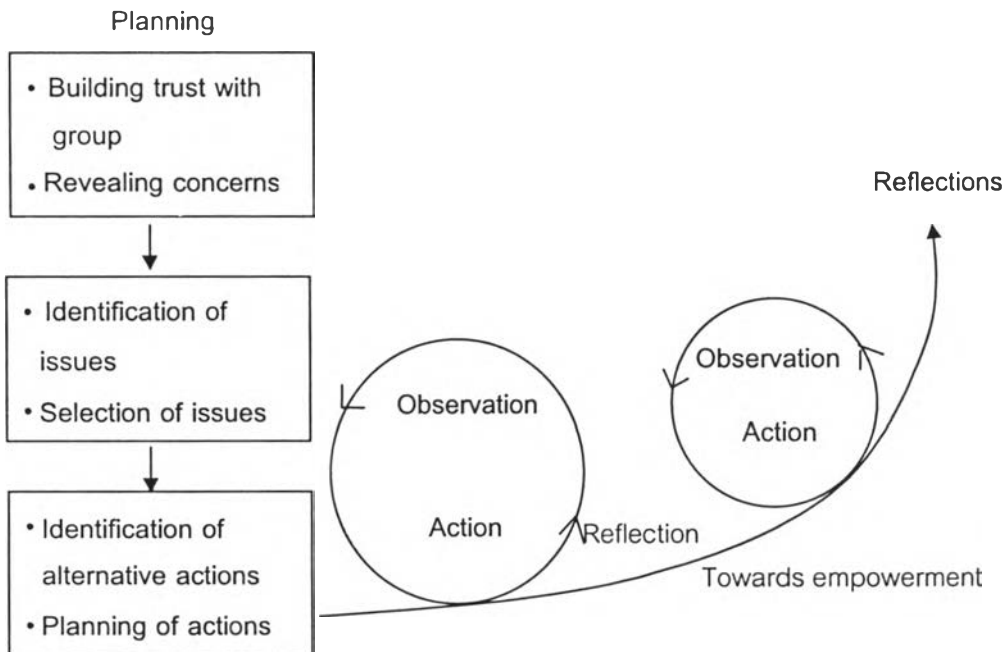
1. All participants must be allowed to participate
2. The wishes of those participants who do not consent to participate should be respected (voluntary participation)
3. Development of activities should be visible and open for suggestion from others
4. Research group must maintain confidentiality of information

Table 3: Comparison of PAR with conventional research

Conventional research	Participatory action research
Traditional model: Controlled, experimental research studies	New model: qualitative study
Starts with review of literature	Starts with the problem that the people are facing
Emphasis on learning about research subjects	Learning from and about research participants
Values objectivity	Values subjective experience also
Research as professional expert Researcher	Research as facilitator or consultant Researcher
Research best conducted by outsiders to avoid bias of subjects	Research must have input from insiders (participants)
Subject's have one role as research subject	Participants have dual roles as subjects and as researchers
Subjects as passive objects and no contribution to study process	Participants are actively involved as partners
Subject's involvement ends with completion of data collection	Participants act as change agents converting research into action
Research agenda shaped by the researcher so the schedule is fixed (monopoly model)	Research agenda is influenced by the participants so the schedule is flexible (democratic model)
Emphasis is more on outcome	Emphasis is more on process

Source: Rogers & Palmer-Erbs, 1994

Figure 1: Participatory action research model



(Adapted from: Purdey, Adhikari, Robinson and Cox, 1994)

2.2 Focus Group Discussion (FGD)

Focus group discussion is another method of qualitative research, extensively used in business circle especially marketing research to develop new products. It could gain reliable information about attitude and behavior of consumers. Moreover, it was low-cost and timesaving. The results could be used as fundamental information to form hypothesis for further research.

The FGD is suitable for issues concerning the participants, for example, belief, opinion, and expectation. Basically it is about the same level of knowledge and

perception of the focus group. It is also for educational media testing, assessment of truth, daily life events.

More specific questions possibly concern health, for example, sickness experiences, treatment, knowledge on risk or risk behavior, compliance of recommended treatment, belief, attitude, needs, access to care, obstacle, treatment expense, satisfaction, acceptance, self-care, and transportation, definition of sickness, commonly spoken terms on health or “common language” from different field of careers. These could be useful to both health provider and health technical official (Glik, et al, 1988)

After all, the FGD is so delicate that could not be measured on one own. The interpretation is very sensitive because it is a content analysis. The content from conversation is important. The content is often answer of the question with reasons. The researcher thus should find out advantages and limitations of this method.

Components of Conducting Focus Group Session

1. Personnel

1.1 Moderator

Moderator is the one who speaks and understands well the dialect, has good personality, polite and modest, and good interpersonal relationship. This is important for generating the atmosphere of discussion, regarded as unofficial conversation. Everyone should be in good mood and cheerful like general talking. The moderator should know the background and objectives of the research fairly well.

1.2 Note taker

Note taker should know how to take note efficiently because he/she needs to note the atmosphere of the conversation as well e.g. silence, laughter, facial expressions, for the benefit of further analysis. Note taker needs to be fluent in local dialect both speaking and listening.

1.3 Assistant

Assistant takes care of general affairs in preparation e.g. location, tape recording, etc.

2. Group discussion guide

Group discussion guide and sequence of topics, including parameter of the research, should be prepared in advance, and be practical and flexible. From the discussion, unforeseen points might be risen from participants' initiation. These rising points could be continued, because it could bring some new findings, which is useful and valuable for the research.

3. Field instruments

The required instruments are as follow.

- 3.1 Tape recorder, blank cassettes, and batteries for voice recording in order to draft afterward.
- 3.2 Notepad and pencil for note taker to take note of conversation and the atmosphere.

4. Screening form

The screening form is for selection of a group of homogeneous participants such as similarity in age, sex, marital status, residence, career, and age of their children. These factors are important criteria.

5. Refreshment and snack

Drinks, nibbles, cigarettes, etc. could accelerate friendly atmosphere among participants.

6. Remuneration

To compliment the participants, despite how small it is, psychologically significant to express researchers gratitude to the participants.

7. Location and time

Location of FGD should be close to the research area. It could be a house, temple resting shelter, tree shade, etc with good ventilation and tranquility in order for concentration on the discussion. Time recommended should not be longer than 2 hours per group.

Procedures

1. Screen participants by the screening form to have a group of 6 – 12 people.

In difficult or boring topic, sometimes the moderator might not be able to encourage conversation and adequate response. If exceeds 12, not all

participants could express opinion and difficult to direct to the required point.

2. After obtaining a homogeneous group, the research team (moderator, note taker, and assistant) take the group to the set up location for a discussion
3. Moderator introduces the research team and the purpose of the discussion, brings friendly atmosphere by providing snack and drink, and asks permission of recording. The purpose of recording should be notified and let the group ask to clarify and create confidence.
4. Start the conversation, follow the planned guide but be flexible to allow group conversation. However, coverage of required contents should be considered. The moderator should anticipate time consumption of each topic, and not losing excessive time on certain topics. In any case, the moderator must not make participants feel that talk is interrupted. When all contents are covered, end the session by question and answer to clarify all of what was spoken.
5. Give remuneration to thank the participants.

Roles of concerning personnel

1. Role of moderator
 - 1.1 Welcome all participants and introduce to one another for acquaintance (in case they are from different places) and invite them to mingle to accelerate friendly atmosphere as ice breaking.

- 1.2 Explain all participants about purpose of the discussion, and convince that all opinions and experience sharing from the participants are useful for the research and they can speak out freely.
- 1.3 Ask permission for recording and note taking for further analysis.
- 1.4 Remember discussion direction and let discussion go freely without interruption
- 1.5 Realize that it is a learning process, therefore do not express opinion. It is the participant who speaks freely and exchange naturally.
- 1.6 Observe participants, an outstanding one could dominate the group, find a way to prevent domination, and urge the quiet ones to speak up.

2. Role of note taker

- 2.1 Draw a position map of discussion members with names and numbers for easier note and drafting later on.
- 2.2 Only take notes, do not share discussions.
- 2.3 Draft from the cassette to understand the note taken with the tape.

3. Role of assistant

Take care of the tape recorder, change the cassette during the discussion, and facilitate to moderator and note taker for maximum capacity. Provide refreshment and snack.

Advantages of Focus Group Session

1. Moderator should be the researcher, or a well-trained person. Once a mistake occurs in the discussion, moderator could correct it immediately because of knowledge in objective and hypothesis of the research.
2. The participants are in a group of 6 – 12 with similarity in background and status. Feeling of inconvenience, fear, or uneasy would not occur from the difference of status or economic level as in the interview. Conversation is among group members rather than face to face, thus easier to express opinions.
3. Chances to speak out and react are more enhanced. The group could discuss extensively, bringing up clearer contents to analyze. That means a reduction of error from misunderstanding or wrong interpretation. If any unclear point, the moderator could ask to clarify and pick up findings from the group.
4. Atmosphere in group discussion reduces fear of being focussed or noted because it is more likely to be group's opinions

Limitations of Focus Group Session

1. Be caution of domination by certain members to other members. Moderator needs some techniques to pay attention to everyone evenly.
2. Certain behaviors or opinions, which are not accepted in the society, would not be revealed in the group discussion but more in private interview.

From advantages and limitations, we can conclude that the focus group session for data collection should be used with consideration on these points.

1. Moderator must be able to understand and speak dialect. The topic of session also indicates gender of moderator. For example, female moderator should lead maternal health topic, and male moderator should lead male sterilization
2. The FGD is one of the tools of qualitative research, there is no figures or statistics to explain quantitatively, but only qualitatively showing attitude, opinion, and behavior background, which could not be obtained from questionnaire. Therefore, FGD should be used for supplementary to survey research or other qualitative research or to test new hypothesis for survey research.
3. The FGD is not universally applicable to all researches. If choose the FGD for data collection method with consideration on its advantage and limitation, as mentioned before, it could enable a quality and reliability of the research.

2.3 Infection Control in Community Hospital

There are 3 components of infection control implementation in community hospital

Component 1 Organization of infection control

- 1.1 Administrative committee of the hospital
- 1.2 Infection control subcommittee
- 1.3 Infection control nurse

1.4 Concerning service delivery points and units

Component 2 Infection surveillance

2.1 Clients surveillance

2.2 Health worker surveillance

2.3 Environmental sanitation surveillance

Component 3 Prevention and control

3.1 Locations and buildings

3.2 Instruments and tools

3.3 Cleaning, disinfecting and decontamination control

3.4 Service technique control

3.5 Environmental and nutritional sanitation control

3.6 Academic development

Component 1 Organization of infection control

1.1 Administrative committee of the hospital: Responsibilities are as follow

- 1) Policy, guideline, and intervention planning on infection control
- 2) Authorize a subcommittee and infection control nursing (ICN)
- 3) Delegate infection control responsibilities to various sectors for good collaboration
- 4) Formulate a complete infection control system and structure
- 5) Direct, control, support and evaluate
- 6) Problem solution and continue to develop guidance

1.2 Infection control subcommittee:

Consists of infection control nurse, appropriate personnel under supervision of the administrative committee of the hospital. Responsibilities are as follow

- 1) Set up program and action plan
- 2) Infection surveillance in
 - Diagnose in case out of handling of the ICN
 - Analyze and interpret surveillance information as a big picture
 - Investigate and control the transmission and solve problems
- 3) Guide the infection control on
 - Nursing techniques
 - Isolation of patients
 - Cleaning, disinfecting and decontamination
 - Nutritional sanitation
 - Environmental sanitation
- 4) Monitor, control, direct, and evaluate the implementation
- 5) Organize regular, at least monthly, meetings when facing a situation
- 6) Summarize meeting, propose a development plan, and submit progress reports to the administrative committee and the director

1.3 Infection control nurse

Consists of hospital and patient building infection control nurses.

Qualifications:

- 1) Registered nurse
- 2) Interested in infection control

- 3) Knowledgeable in infection surveillance, e.g. data collection, analysis, interpretation and conclusions.
- 4) Skilled in coordinating, communication, and counseling to staff
- 5) Good interpersonal relation, with dedication, patience, and sense of responsibility

Responsibilities

- 1) Completely and continuously record, verify, and collect data by the designated form for infection control in patient buildings as delegated
- 2) Diagnose the infection, according to capability level. In urgency, report to the infection control committee
- 3) Collect, analyze, and preliminarily interpret data of both in-patients and referred data from community health care at least twice a month and at every urgency
- 4) Collaborate in investigation and problem solution
- 5) Conclude and report the results, and problem solution method to the subcommittee in monthly meeting
- 6) Educate and counsel in infection control
- 7) Collaborate with concerning personnel and service delivery points to accumulate infection control data both in hospital and community

1.4 Concerning service delivery points and units, responsibilities are as follow

- 1) General administrative service delivery point
 - Establishment of visit regulations

- Maintenance plan for building and areas
- Provide sufficient clean water
- Control and regulate the practice of environmental sanitation, cleaning, and nutritional sanitation with collaboration of sanitation and disease control service delivery point

2) Community pharmaceutical service delivery point

- Monitor quantity of drug use in the hospital, especially antibiotics
- Set standard of disinfectant, dilution ratio, container, cleansing, disinfecting and decontaminating instruction
- Supply efficient quality disinfectant at reasonable price Regulate the production of disinfectant with sterile technique
- Control the use of disinfectant and antibiotic according to standard
- Provide information of type, price, and instruction of disinfectants and antibiotics
- Collaborate in staff training on pharmaceutical technique
- Consult in pharmaceutical, e.g. disinfectant and antibiotic use

3) Public health laboratory

- Monitor pathogens and diseases from specimens and report any uncommon event to the superior
- Set up standard of laboratory sampling
- Regulate the management system of place and instrument to meet infection control principle
- Follow the practice of infection control
- Regulate the decontamination system of specimen

- Culture to identify pathogens and its source for future reference
 - Inspect the decontamination system regularly
 - Laboratory test for health check-up of hospital staff
 - Provide information of antibiotic resistance to concerning organizations
 - Training and technical consultation
- 4) Nursing service delivery point
- Regulate the management system of place and instrument and nursing practice for infection control
 - Regulate cleaning, disinfecting, and decontamination system in buildings, central supply, laundry, and other service delivery points
 - Lead in continuum infection surveillance in clients and health workers
 - Evaluate and improve Nurse's notes
 - Health education focussing on infection control to patients and relatives
 - Regulate the visit of highly infectious patients
 - Training and technical consultation
- 5) Sanitation and disease control service delivery point
- Infection control in environmental sanitation
 - Water quality improvement
 - Wastewater and solid waste management
 - Regulate the management system of place and instrument in nutritional sanitation of hospital and shops

- Eliminate sources of carrier
- Together with concerning organizations, investigate the source of epidemic
- Training and technical consultations

6) Dental health

- Regulate the management system of place and instrument and dental utensil for infection control
- Follow the practice and infection control technique
- Regulate the decontamination system as in standard
- Technical consultations

7) Health promotion

- Infection surveillance in client group
- Monitor the infection situation in high risk patient or suspected patient of infection from hospital, if found at home visit, report to ICN
- Health education about infection control to patient and relative
- Regulate the management system of place and instrument to patient and relative
- Follow the practice and infection control technique
- Training and technical consultation

Component 2 Infection surveillance

Infection surveillance is a systematic observation with awareness and continuity on the presence and transmission of infection in the hospital, and the trend of infection risk. It can be divided into 3 main categories due to target group:

- Surveillance in clients
- Surveillance in health workers
- Surveillance in environmental sanitation

2.1 Surveillance in clients

1) Process of surveillance in clients

- Add surveillance record form to all in-patient records
- Fill in the record form of every in-patient since the first and every visit until discharged
- Monthly collect the completed surveillance record form and separate when discharged
- Monthly analyze and interpret and during emergency, e.g. epidemic in the hospital
- Monthly present the results on display chart i.e.
 - Infection incidence, location, and incidence rate in the hospital
 - Number of infection episodes, displayed by location and place of infection (building/service delivery point/community)
 - Number of episodes, displayed by location and type of pathogen
 - Number of patient using antibiotic, by type, quantity, and place (building/service delivery point/community)
 - Expenditure of antibiotic used in the hospital
- Immediate investigation once epidemic occurs, or is suspicious
- Solve problems and control the epidemic
- Monthly report to concerned organizations

- Monthly present the surveillance results to the subcommittee and the committee

2) Tools of surveillance in clients

- Surveillance record form in clients
- Definitions for infection control

2.2 Surveillance in health workers

1) Process of surveillance in health workers

- Health worker physical check-up plan
- Designate target groups, prioritize, and identify high risk group, and design parameter and frequency of the check-up
- Provide physical check-up with an action plan and follow up plan
- Collect the report of physical check-up
- Analyze and interpret the health status of health workers and detect infected or high risk health workers
- Investigate and solve problems
- Follow up infected health workers and provide treatment
- Report the results of physical check-up and the infection situation to concerned sectors
- Monthly present the results of surveillance in health worker to the subcommittee and the committee of the hospital

2) Tools of surveillance in health workers

- Report form of physical check-up in health workers

2.3 Surveillance in environmental sanitation

1) Process of surveillance in environmental sanitation

- Monthly data collection by environmental sanitation quality test and record in a form
- Monthly analyze and interpret sanitation and environment status in hospital and in emergency situation
- Investigate and solve problems
- Regulate the environmental sanitation practices of health workers to be precise and in continuation
- Monthly report the results of environmental sanitation to concerned sectors
- Monthly present the results of environmental sanitation to the subcommittee and the committee of the hospital

2) Tools of surveillance in environmental sanitation

- Hospital environment quality test form
- Standard criteria for the environmental sanitation test

Component 3 Prevention and control

Prevention and control of transmission in hospital is another important component, which should be carefully considered in regular practice concerning place, service providers and clients. It is necessary to set up a comprehensive and clear guideline, including evaluation in a common practice of all sectors

3.1 Place arrangement

1) Bed

- A space from wall to the chief edge of bed at least 0.30 meter
- An interval between beds at least 0.90 meter
- A space from feet edge of bed at least 2.10 meter
- Scrub with water and detergent
- Frequency of cleaning
 - Daily
 - When dirty
 - When discharge

2) Sink

- Separate hand washing sink from equipment washing one
- Hand washing sink provided in patient building or other service delivery point
- Soap container provided at every sink
- Soap container is clean and drained
- Hand dryer equipment (blower, paper, disposable napkin, or always-dried napkin)
- Daily cleaning sink, of using water and detergent

3) Isolate room

- Swing-opened door
- Separate equipment from general patients' equipment
- Sink with soap and hand drier provided

4) Entrance and exit of building

- Dispost contaminated objects (cloth, trash) at separately exit

3.2 Equipment and tool

1) Wet dressing cart

- Well-grouped equipment and tools
- Transfer forceps in a container of a height that the top end of forceps is $\frac{1}{3}$ of container's height higher than the top edge of the container
- Disinfectant for forceps at $\frac{2}{3}$ of container's height
- Solution bottles clearly labeled
- Glass bottle containing wet-dressing solution within 7-day use after refill
- Saline, change every 24 hours
- Tray with disinfectant for used instrument
- Artery scissors, dispersed after used for complete contact with disinfectant
- Pot containing gauze, cotton and change daily
- Always clean and decontaminate bottles before refill
- Clean disinfecting tray and decontaminate before refill, and every 7 days
- Clean the cart daily
- No trash bin on the cart

2) Sterile gauze drum

- Drum with cover lid
- Ventilating pores for vapor inlet
- Sliding lid for vapor inlet
- Clean the drum daily

3) Sterile equipment (autoclave)

- Container with vapor inlet
- Wrap equipment with double-layered cotton cloth
- Wrap with 2 pieces of double-layered cotton cloth
- Label content
- Label date of sterilization
- Marker tape
- Tape must clearly turns black
- Deliver by cart in well covered container
- Clean delivery cart
- Store according to categories
- Arrangement for first come first use
- Always close storage closet
- Inspect wraps and date of sterile weekly
- Clean the closet with disinfectant at least weekly

4) Washing machine

- Only untorn, stain free no odor cloth
- Cloth used with burn cases, send to autoclave
- Keep in clean closet
- Replace cloth when dirty
- Cloth with perspiration, put in used cloth bag
- All used cloth are not to be unloaded in patient's building
- Always close used cloth bag
- Contaminated cloth must be decontaminated before regular washing

- Clean the closet of washing machine with water and detergent at least monthly

5) Drug, solution, and disinfectant

- Store in categories: oral, solution, disinfectant, etc.
- Arrangement for first come first use
- Keep away from heat and moisture
- Clean the storage area with water and detergent at least weekly

3.3 Cleaning, disinfecting, and decontaminating control

1) Set up measures and cleaning period of building, place, equipment, and instrument as one standard

2) Antiseptic and disinfectant

- Set up one standard
- Control the quantity of use and supplying
- Control quality, dilution and mixing method and water
- Contain antiseptic in sterile container

3.4 Service technique control

1) Follow the prevention and control techniques with patient classification as follow

- Non-infectious patient
- Infectious patients
 - Hazardous stage
 - Non infectious stage

- Low immune / high risk for infection patient

2) Clean hands in the following situations

- Dirty hands
- Before contact to low immune patients
- After contact to contaminated objects or patients
- Before and after nursing performance

3) Hand washing methods

- Normal hand washing

Descriptions

- Dirty hands
- Before contact to low immune patient

Cleansing agents

- Use washing soap

Methods

- Wash with soap and water at least for 20 seconds
- Dry hands with napkin or clean dry towel

Containers

- Clean and drained

- Hygienic hand washing

Descriptions

- After contact to infectious patients
- After contact to contaminated objects

Cleansing agents

- Chlorohexidine 4%

- Iodophore 7.5%

Methods

- Wash hands with disinfecting liquid soap thoroughly at least for 30 seconds
- Rinse with water
- Dry hands with napkin or clean, dry towel

Containers

- Open with elbow or foot action
 - Clean containers before each refill
- Surgical hand washing

Descriptions

- Before performing operations

Cleansing agents

- Chlorhexidine 4% or
- Iodophor 7.5%

Methods

- Scrub hands and lower arms up to elbows for 3 – 5 minutes with disinfectant
- Rinse with clean water
- Dry with clean cloth

Containers

- Open with elbow or foot
- Clean and decontaminate before each refill

4) Control

- Daily supervision by chief of service delivery point for service technical control
- Supervision by the committee for service technical control twice a year

3.5 Environment control

1) Waste disposal

- Separate infection and non-infection waste with clear label
- Bin with cover
- Bin in good condition
- Inner plastic bag
- Waste collecting every day
- Tightly close plastic bag
- Collecting route bypassing patient wards and nurse stations
- Dry waste bins before use

2) Used sharp tool and needles

- Container with cover, and needle stick resistant
- Disinfectant in container
- Needle disposal without recapping
- Disposal of full container

3) Handling of AIDS and other communicable disease bodies

- Put on rubber gloves before handling corpses
- Block all orifices with cotton

- Clean bed and equipment with disinfectant

4) Water supply

- Water supply meets physical, chemical and biological standards
- Freely flowing water from taps (during peak load, water pressure should reach at least 15 lbs/sq.inch)
- Always available in stable flow
- Clean / scrub the tap and sink every 8 hours and after contaminated

5) Wastewater system

- Wastewater inlet covered with screening rack
- Drain water flows easily to the inlet
- Drain water from different service delivery points flows directly to wastewater treatment system
- Wastewater system separate from rainwater drainage system
- Residual chlorine = 0.5 – 1.0 mg/l
- Dissolved oxygen (as treatment pond) = 10 – 15 mg/l at daytime

6) Carrier control

- Clean the area everyday to prevent carrier
- Collect leftover in plastic bag in a covered bin (not to be feeding source of pest) and discharge everyday
- Destroy incubating sources, at least twice a year
- Get rid of carrier pest at least twice a year

3.6 Food sanitation control

- 1) Cooks must be healthy, have good, clean habit and non-carrier, with physical check-up and recommended prevention and treatment continuously
- 2) All food additions and seasonings are approved by Food and Drug Administration
- 3) Food cart are covered and cleaned with detergent and wiped dry at every transport
- 4) Food containers for patient is sterilized with heat or chemical, cleaned and stored in safe place away from carrier pest
- 5) Leftovers must be boiled at least 30 minutes before feeding animals
- 6) Waste disposal, see details in Environmental sanitation management
- 7) Training for food personnel, both of hospital and private food shop, in hospital on food sanitation
- 8) Monitor, control, and evaluate implementation outcomes of food shop continually

3.7 Academic development on infection prevention and control

- 1) Health manpower development
 - Orientation to personnel of at all levels before service
 - Regular academic conference / training / workshop
- 2) Health education and public relations
 - Produce education ware
 - Produce public media

- Publicize health education continuously and up-to-date
- Planning for health education for patient and client
- Health education to individuals / groups of patients and relatives
- Campaign on infection control in hospital at service delivery point and hospital level

3) Research

- Collaborate in research with other sectors
- Carry on a research by hospital staff or team

2.4 Participation

Participation by people or community is a new rural development strategy inducing self-reliance, self-confidence, and sense of belonging to people. It brings a capability and efficiency of self-governance as in democracy and also to manpower development to reach a true sustainability. (Primary Health Committee Office, 2528)

There are 3 components in participation

1. Ego involvement. Involvement to emotion or mental aspect of an individual self, not only physical or skills (Task involved)
2. Action. When participant has an ego involvement, it provides the participant a chance to initiate, and take action to reach the group's goal. Participation thus is more than a consent to follow orders, which is an action of no free will and no initiation
3. Shared responsibility When participant has ego involvement and takes action, the participant feels responsible to the group's situation.

Participation is a social process consisting of self involvement to the group and must perceive the outcome of the action, thus it is a responsibility

Procedures and scheme of participation

World Health Organization (WHO) in 1979 (Pinsakul, 1999: 24) explained participation as a 4-step process

1. Planning

Members take part in problem analysis, prioritizing, setting up goal of resource exploitation, follow up and evaluation plan

2. Implementation

Members take part in management in resource use

3. Utilization

Members are capable to run actions to be useful, increasing self-reliance, and social control

4. Obtaining benefits

Such as private benefit or as material

Pinthong, 1980 (Ketsingnoi, 1998: 49) classified participation into 4 steps

1. Participation in problem statement and cause identification
2. Participation in planning
3. Participation in budget raising
4. Participation in evaluation

Dejarin, 1980 (Ketsingnoi, 1998: 50) mentioned about process of participation in implementation to reach development goal as participation in:

1. Problem statement and cause, including needs, identification in the community
2. Find / formulate a scheme and method to solve the problem, to create new initiation, which responds to community's need and is useful
3. Planning of action plan or project to solve problem and respond community's need
4. Decision making to exploit limited resource to public benefit
5. Formulate and improve administrative system for efficiency and effectiveness
6. Financial support to one's capacity
7. Follow the policy and plan to the achievement
8. Direct, follow up, evaluate and maintain the activities provided by GO and private sectors for long-term use and benefit

Suwanmonkol (Srisongsom, 25341991: 16) mentioned the public participation had 4 scopes, the participation of general people in:

1. Decision making
2. Selection of alternatives of intervention
3. Taking action in activities
4. Evaluation of the outcome

Participation traits

Suksamrit (Srisongsom, 1991: 17) mentioned the participation of general people as:

1. True participation

A participation of public from the start to the end of the project: justification, problem statement, intervention finding, policy planning, resource exploitation, implementation, direct, control, and evaluate.

2. False participation

Partially participation in activities already planned

Jongwutiwet (Srisongsom, 1991: 20) mentioned 3 types of participation

1. Direct participation

A participation through public-organized organization e.g. youth group

2. Indirect participation

A participation through public representative organization e.g. committee member, village committee member

3. Opened participation

A participation through non-public representative organization e.g. institute, organization inviting public to participate for always

Pary, 1972 (Srisongsom, 1991: 21) mentioned that participation is an action not only a thought but measurable (Operationalization of concept) in 3 dimensions.

1. Method of participation

Types of activity participants act in the plan

2. Magnitude of participation

Answers of the question “who participates and how often?”

3. Quality of participation

Answers of the question “what are outcomes and was it a true or false participation?”

Participation of community has considerations in terms of coverage in 3 aspects.

1. Type of participation

Decision making in accordance with implementation, including connection to community in terms of benefit and evaluation of the activity

2. Participants

Participants and economic and social status of the participants

3. Quality of participation

Fundamental, type, scope of participation, direct or indirect participation, and results

Comprehensive and careful consideration on participation in the development could perceive the whole picture of participation and could support the participation appropriately.

Factors influencing community participation

Factors influencing community participation in development activity toward achievement of goal were discussed as follows.

1. Consideration of superiors

2. Needs for unity
3. Respect in leaders
4. Relationship to civil service officers
5. Expectations of return benefits
6. Acceptance of existing implementation
7. Nuisance of existing environment
8. Economic status

Anantachai (Srisongsom, 1991: 23) explained that willingness to participate comes from 5 influential factors.

1. Need to follow the group
2. Need to be important
3. Need to gain benefit
4. Need to experiment
5. Need to solve or compensate the past mistake

2.5 Related Research

Pinsakul, (1999) studied the results of participatory improvement toward compliance in infection control in male medical in-patient building in Lampang hospital. He found that after participatory problem solving, the target population had significant improvement in infection control practice comparing to the previous at $P=0.01$ level. The target population utilized mask, gloves, and dam 100% more, except for the goggles. Hand washing before operations increased from 20.5% to 87.7% and after operations increased from 98.9% to 100.0%. All members agreed upon the

participatory improvement and looked forward to continuing of self-protection and blood and bodily fluid borne disease control.

Jinwong et al. (1996) studied development of diabetes patient care system in community and health service place. He found that diabetes patient care system in Pimai, Prathai, and Non-Soong districts, was systematic, clear and well-collaborated in team, including planning and setting direction and standards. The staff had knowledge, attitude, and skills in patient care. There was a continued learning process through out the program. Evaluation found that the average of punctual follow up visits increased and the blood sugar during the program decreased relatively.

Thoo-prajang, (1986), studied on participation of development in rural environment conservation promotion and found that

1. Most of development officers moderately participated in the rural environment conservation promotion
2. Participation in planning and implementation was higher than that in maintenance
3. Duration of implementation, duration of action, and opinion toward environmental problem was related to the participation in rural environment conservation promotion
4. Sex, age, education level, location, working area, and information updating had no relationship to the participation of rural environment conservation promotion

Pichiensathien et al., (1995), studied the effect of education and provision of facilities in the emergency room, Maharaj Nakron Chiangmai Hospital on the practices of universal precautions by emergency room nurses. The results indicated that intervention measures increased the compliance with universal precaution from 48.7% to 63.4% ($P < .01$). Wearing gloves was the highest used of protective barrier, increased from 53.8% to 84.7% ($P < .01$). The use of masks increased from 0.3% to 5.0% ($P < .01$), but other types of protective barrier were ignored. Handwashing after procedures increased from 28.7% to 93.1% ($P < .01$), but handwashing before procedures did not improve.