PATTERN OF UTILIZATION OF HEALTH REFERRALS TO MAINLAND INDIA FROM SOUTH ANDAMAN ISLANDS- THEIR CAUSES AND CONSEQUENCES

Dr. Almas Shamim

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Dedicated to my best friends, Shamim and Rehana.

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CERTIFICATE

Certified that the dissertation entitled "Pattern of utilization of health referrals to mainland India from South Andaman Islands- their causes and consequences" is a record of the research work undertaken by Dr. Almas Shamim in partial fulfilment of the requirements for the award of the degree of "Master of Public Health" under my guidance and supervision.

Dr. T.K. SUNDARI RAVINDRAN MSc, PhD

Professor

Achutha Menon Centre for Health Science Studies

Sree Chitra Tirunal Institute for Medical Sciences and Technology

Thiruvananthapuram, Kerala

October, 2014

DECLARATION

I hereby declare that this dissertation titled "Pattern of utilization of health referrals to mainland India from South Andaman Islands- their causes and consequences" is the bonafide record of my original field research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Dr. ALMAS SHAMIM

Achutha Menon Centre for Health Science Studies

Sree Chitra Tirunal Institute for Medical Sciences and Technology

Thiruvananthapuram, Kerala

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Abstract

Introduction: Dis-economies of scale restricts the availability of tertiary health care in island populations, thereby necessitating referrals to the mainland. Few studies have been conducted on referrals from island populations. This study aimed to find the pattern of referral utilization from South Andaman Islands to mainland India in the past one year, the factors associated with such referrals, their causes and consequences.

Methods: The study consisted of a cross sectional survey using a structured interview schedule and ten in-depth interviews. Probability proportional to size cluster sampling was done to choose 350 random households where any member had utilized any health service in the past one year. Purposive sampling was done to choose informants for in-depth interviews.

Results: A total of 343 households were included in the study, with a response rate of 98%. The referral rate of households in the past one year was 22.7%. Of the 106 referrals reported, 84% were self referrals. The odds of completing referrals was higher among the older age groups, people whose families have resided in the islands since before 1942, households with a higher socioeconomic status and with higher education. Most referral cases had a history of treatment in mainland India or friends/families in the mainland. The most common cause for the referrals was ‘dissatisfaction with the services’ and most of the referrals had favourable outcomes.

Conclusion: Patient perception of health needs and past experiences aided by “patient activation” play the decisive role in referral utilization. While a lack of tertiary level health care in island populations leads to “island penalty”, poor services in primary care, bad behavior of the doctors and negligence lead to people being dissatisfied and seeking referral care even for the services available in the island health system, mounting to a “compounded island penalty”.

Chapter 1

Introduction and review of literature

1.1 Introduction

1.1.1 Primary health care

It was way back in 1978, during the International Conference on Primary Health Care held at Alma Ata, Kazakhstan, that national leaders from 134 governments and representatives from 67 non government organizations affiliated to the World Health Organization(WHO) and United Nations International Children's Emergency Fund(UNICEF), undertook the uphill task of providing 'Health for All'.[1] More than three decades later "Health for All" remains more of an unrealized dream. Though many countries have succeeded in bringing many adverse health conditions under check, much still remains to be done.[2]

A major reason behind this could be the incomplete understanding of the role of hospitals in "Primary Health Care" and neglect of the role of a functional referral system.[3] The Alma Ata Declaration clearly states the role of referrals in supporting Primary Health Care. Without a secondary level to refer to, the primary health care level would not sustain its functionality. Likewise, tertiary referrals would be required to provide specialized care that cannot be provided at the lower levels. This chain of continuity is essential for a functional health system.[1]

1.1.2 Secondary and tertiary health referrals

Health referrals become all the more important because much of the world is rural, facing a dearth of health amenities, while much of health care is concentrated in the urban areas. India, the second most populous country in the world had 68% of its total population living

in rural areas in the year 2012; the absolute number of people living in rural areas is humongous.[4] All secondary and tertiary level health needs of these populations rely heavily on a functional referral system. Access to health care is a top priority health problem not only in developing countries like India, but also in developed countries like the United States of America.[5]

Even within rural areas there are 'remote rural areas' characterized by geographic peripherality and a lack of transport and communication infrastructure. This can vary contextually between countries, but is however, true for most rural mountainous regions and island regions.[6]

Households across the world are being pushed into poverty owing to the out of pocket expenditure on health. Poorer households and cases which require hospitalization bear a larger burden of such out-of-pocket expenditure. Besides treatment cost, indirect costs of food and accommodation for the caretaker of the patient and also travel expenses to and from the health facilities pose a financial burden to families. These indirect expenses can be huge in case of referrals from remote and rural areas. Health referrals for secondary and tertiary level care without a secure financial support can have drastic consequences for families and pose a big challenge for Governments.[7]

1.2 Review of Literature

1.2.1 Introduction to Review of Literature

This review attempts to throw light on published literature on tertiary health referrals with a special focus on remote populations and island communities. Online searches were done for full text articles in Pubmed, Google Scholar and IRIS. Owing to the very sparse literature available on island referrals, Google Search for other reports was also done.

At first a brief overview of referral systems with relevant definitions is provided. Then a review of the various causes of under utilization of secondary and tertiary referrals and the barriers faced by people in accessing health referrals from rural and remote locations is presented. Following this is a review on islands as a special case. Then a review of the assumption behind compliance of referral hierarchies is presented. It helps explain why over utilization of referrals can occur in spite of the many listed barriers. Lastly, a review of over utilization of referrals by the health system and patients' tendency to bypass referral hierarchies and self refer themselves to higher levels of healthcare is documented.

1.2.2 Referral systems

The World Health Organization defines 'referrals' as *'a process in which a health worker at one level of the health system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in, or take over the management of, the client's case.'* [8]

Referral care forms the basis of the hierarchical model of health care that exists in most of the developing countries of the world. Lord Dawson of Penn, was the first to propose the setting up of health centres as the first point of contact to obtain basic health care facilities.[9,10] Primary care is incomplete without a properly functional referral chain in place.[1] 'Secondary referral' is the first link in such a chain. It 'carries' patients and problems related to health care delivery that cannot be handled in the most basic health centres to the next level, that of the hospitals. It can be thus defined: '*Secondary referral health care is an intermediate level of health care that includes diagnosis and treatment performed in a hospital or health center having specialized personnel, equipment, laboratory facilities and bed facilities'*.[11]

Secondary referrals usually operate at the district level (or a similar administrative unit). Secondary referrals are made from the peripheral health centres to the district level hospitals which have specialized services available. Surgeries and some complex procedures and diagnostic tests can be availed at this level.[12]

The next referral in the chain is 'the tertiary referral' which can be thus defined:

'Tertiary referral health care is more specialized medical care for patients who are usually referred from secondary care centers. It includes subspecialty expertise in surgery and internal medicine, diagnostic modalities, therapeutic modalities for treating advanced and/or potentially fatal diseases (e.g. cancer)'[11]

It consists of regional and national level hospitals usually in the bigger cities which receive referrals from the district hospitals for diagnosis and treatment that requires highly specialized equipment and procedures.[12]

This hierarchical model of health referrals is believed to be the most cost-effective for developing countries, provided the various components of the referral system are in place and functional. The World Health Organization mentions five major components of a referral system. Each component has requisites that must be met to ensure a proper referral system.

1. Health System- This includes the existence of health care providers (both private and public) in a setup having strong basic health provision and a clear understanding of the role each facility has to play. It also requires organization protocols for referrals and communication and transportation facilities to be available. The Ministry of health and the educational institutions imparting medical and nursing training are also involved in the health system along with academic and professional associations.

2. Initiating facility- It includes the decision making for referrals, stabilizing the patient before the referral and issuing a record of the treatment provided at the referring facility.

3. Referral practicalities- This includes the practical aspects of any referral process. It starts with informing the patient's family about the need for a referral and the consequences of non referral. The patient's family must be given information on how to reach the receiving facility-its address and the preferred mode of transport available. They must be told about whom to contact once they reach the receiving facility and what are the possible treatment modalities/diagnostic tests to be performed there. An instruction for counter referral must also be given and a referral slip should be given to the patient or his/her family. The referral initiating facility must also contact the receiving facility informing them of the referral that has been initiated and making arrangements for the takeover of the patient's case.

   It is also important to understand the patient's fears and potential and existing barriers that he/she might face in availing the referral services. A referral register must be maintained to monitor follow-up and for evaluation.

4. Receiving Facility- It must receive the patient along with the referral form, provide appropriate management and document all management. At the time of discharge, the receiving facility must, in consultation with the patient's family, make a plan of the ensuing follow-up and discharge the patient with a back referral form as well as feedback to the initiating facility on the appropriateness of the referral that was sent. Here too, a register must be maintained to monitor follow-up and for evaluation.

5. Supervision and capacity building- Regular monitoring of the entire process must be done. The number of referrals and their appropriateness and compliance with protocols

and documentation of the process must be checked. Regular feedback must be given to all concerned facilities.[8]

A flaw in any of the above mentioned components can be detrimental to the referral process. Due to such flaws many patients never reach the referral facility in spite of being referred, leading to an under utilization of referrals while many others seek treatment at the referral facilities even when they were not referred by the system, leading to an over utilization of referrals.[3]

1.2.3 Under-utilization of referrals

Causes behind under utilization of referrals:

Barriers related to the system:

The most crucial system related barrier faced by the people in accessing referral care is **financial barrier.** Under utilization of referrals exists in the rural and remote parts of the developed world as much as they exist in the developing world. A study conducted by Beedasy in Idaho in 2010, United States of America, aimed to examine the spatial accessibility to tertiary and quasi tertiary healthcare facilities in Idaho which is a mostly rural state. It noted that the health care seeking behavior of people living in rural areas was significantly different from those living in urban areas; long distances and scarce transport facilities imposed a heavy financial burden on the people while accessing referral care leading to a lower health care utilization in rural areas.[13] The study also showed the importance of having proper definitions of 'rurality' while assigning rural status to locations or while planning interventions to increase accessibility in rural areas, since a minor change in the cut-off distance from a metropolitan area can change the eligibility status of a large group of people to health care programs and insurance schemes that are based on the

definition of ‘rurality’. Availability of medical insurance that can cover the expenses for healthcare also determined the health seeking behavior of patients.[13]

Under utilization of referrals in the developing world is more prominent because of the severe lack of sufficient infrastructure and health personnel. In a study conducted by Peterson et.al. in 2004 in Uganda with an aim to document the compliance with referrals under the Integrated Management of Childhood Illness (IMCI) to hospitals from twelve health facilities, referral completion rate was as low as 28% and the main reason cited by parents for non completion of referrals for their ailing children was a lack of money (90% of the cases).[14]

An earlier (2000) study by Al Fadil et. al. in Sudan with the same objectives, 34% cited cost of treatment as the reason for not complying with referral advice.[15]

Another study conducted by Kowalewski et.al. between May and July 1996 in one rural and one urban district in the Mtwara region of Tanzania found that financial reasons werre the most important behind not completing referrals for obstetric care.[16] A shortage of money can deteriorate the medical condition of the patient due to a delay or complete lack of referral care.[14, 16]

A 2005 Tanzanian study by Pembe et.al. documented the perceptions about maternal referrals in Rufiji, a coastal district. It was a qualitative study and used Focus Group Discussions (FGD) as a tool. Here the cost of transportation to the referral facility and the cost of living emerged as two of the top five factors influencing referral compliance.[17] The cost of transportation itself can be a significant proportion of the total health expenditure. In most countries studied in the World Health Report 2010, the transportation costs were more than 10% of the treatment cost.[18]

A 2009 survey in Afghanistan by Newbrander et.al., was conducted in five rural districts with the objective of studying compliance to referrals in rural areas. The study showed that though transportation expenses were high, some patients chose to 'walk the distance' and hence incurred no additional expenses.[19]

Another important system related barrier is **the geographic location and distance to the referral facility.** A study conducted by Kalter et.al. on all children between 1 week to 5 years of age who were seen at a first level health facility between September 1999 and April 2000 in Ecuador showed that the longer the distance that people have to travel to access specialist health care, the greater a problem it is to them. The study, which tried to identify the various factors that adversely affected referral compliance, also concluded that the issue of referral slips was positively related to referral compliance and that people who were **not given 'referral slips'** tended to not complete the referral advice. [3,20] The 2009 survey conducted in five rural districts in Afghanistan also concluded that increasing distance from the health care facility significantly alters the health seeking behavior of the patients and that issuing referral slips increased the chance of compliance.[19] Besides it noted that in rural areas, there is a **shortage of transport facilities** that compounds the problem of long distances. In the absence of public transportation, private vehicles have to be used, adding to the patients' financial woes.[19] This is especially true because in developing countries secondary or tertiary hospitals are usually in the urban areas as also most of the private sector specialists and super-specialists. This **urban bias** in developing countries proves to be an additional barrier since most of the people in such countries live in rural areas.[9]

A study in Liverpool, United Kingdom, conducted by Gardner et.al. in 1999 tried to explore the barriers to referral care for revascularization among elderly stable angina patients. This

study, conducted qualitatively through semi structured interviews found that there was underutilization of referrals due to reasons related to patients as well as their treating physicians. While the patients had a fear of hospitals and treatment, some even living in denial of their illnesses, the doctors also showed **diagnostic confusion** leading to non referrals in cases that called for revascularization.[21]

Barriers related to the patient:

Even if the patient or the patient's family find ways to overcome the financial barriers, it is not always necessary that referral advice will be complied with. In many cases there are **age related barriers.** In the Ecuadorian study by Kalter et.al., lower age of the patients(children less than two months) was associated with lesser compliance to referrals owing to their vulnerability. It could also imply that caretakers were not willing to spend more resources and stay overnight to take care of the more vulnerable.[20] In some cultures women require permission from their husbands in order to go to a medical facility for their own treatment or even to take their children to referral facilities. If the husband is not at home or denies permission for referral, the referral is not completed. A low prioritization of referrals due to 'other responsibilities at home' was also seen in the Afghanistan study of compliance in five rural districts and the Ugandan study of IMCI referrals. [14], [19] Such **gender barriers** were also noted in the Ecuadorian study mentioned above. [14], [20]

FGDs held in the Ugandan study found that people associated referral facilities with **cultural and language barriers** and this too affected their compliance decisions. A lack of familiarity with the hospital and a general fear of new surroundings and urban areas could also lead to a fear of discrimination. Rural patients may also be scared of the fact that they might not find social support in the urban environment.[15]

Kalter et.al. found that a **low education status of the caretaker** posed a barrier to compliance with referral advice. Education status indirectly acts by shaping perceptions about the health system, about the severity of the illness and also by influencing families' priorities.[20]

Kowalewski et.al. in their Tanzanian study on maternal referrals found that **perception of severity of illness** could be a barrier. If the illness is not perceived to be severe, referral is not complied with.[15]

Many perceptual reasons were found in the rural Afghanistan study, that were barriers to referral completion. The **source of recommendations** influenced people's compliance decisions. People gave more consideration to recommendations made by their family members and other community workers, rather than clinics and hospitals.[19] Patients with a **previous bad experience with the referral facility** tended to not complete referrals the next time.[19] **Perception of poor quality of the referral facility** made them avoid completing the referrals.[19] And a **perception of better quality of locally available health care** also posed as a barrier for referral completion. The qualitative study on maternal referrals by Pembe et.al. in Tanzania showed that if people saw maternal conditions being managed successfully in their local setup, acceptance of future referrals decreased.[17]

1.2.4 Islands: A special case

Literature dealing with health system delivery in islands and the problems associated with it is sparse. This is true for all islands, whether remote and far off or in close proximity to the mainland, whether in the developing world or in the developed. However, existing literature identifies that the main problem associated with health care delivery in islands is that of dis-economies of scale.[22]

The cost of providing hospital facilities in the small and remote islands can be much higher than that in the bigger and urban areas. This is because in large set ups 'economies of scale' can be achieved. Economies of scale refer to the principle by which unit cost of production (in this case, unit cost of providing services) decreases with increasing production (in this case, increasing size of the hospital) and when this cannot be achieved, 'diseconomies of scale' results. This is 'diseconomies of scale' and is more commonly seen in remote locations and islands.[23] For example, the cost of procuring materials to the islands for infrastructure can be very high. Recruiting professionals to work in remote populations may call for special incentives, while the volume of users is generally low. Hence, the chance of islands providing high-end specialist treatment in big hospitals is less as compared to the mainland. An alternative to this lack of healthcare availability in the islands is through referrals to the mainland, however, this too, is an expensive affair particularly in nations and states where the referrals are not government funded.[22]

The health care accessibility problem of the islands is, in many ways, similar to that of remote areas on the mainland. However, the small size and physical separation from the mainland by a water body keeps islands at a special disadvantage, in that even islands which are not very far from a mainland city and not very rural, will continue to face problems of accessibility simply because of their geography. This has been rightly termed an "Island Penalty". [22] The small size of islands makes it difficult to provide on-island tertiary services thereby necessitating referrals and the isolation makes it difficult and very expensive for the patients to be taken off-island for treatment that can lead to an underutilization of referrals.[24] However, situations can vary widely from one context to another. In Jamaica, in spite of availability of on island services, the wealthier groups prefer to take treatment outside their

islands. This phenomenon shows that even in island populations, with their very conspicuous barriers, by-passing one health facility for another is common.[25]

1.2.5 Assuming compliance with the referral hierarchy

The above listed barriers to referral utilization are all based on the general assumption that patients follow the hierarchy of referral facilities.

Rex Fendall, the Director of Health Services in Kenya during colonial rule, is quoted to have said that in a resource poor country "*referral system is the only way to supply health service at a modest level to all the people and yet to provide, at the same time, the highest standard of care to those in urgent need*."[9]

The belief that patients comply with the referral hierarchy is however a based on certain assumptions:

1. Patients want to minimize the cost of receiving a health service.
2. Common illnesses can be treated at all levels of the referral ladder.
3. At referral receiving facilities, the cost of treatment is higher for everyone.
4. Quality of care at non-referral facilities is acceptable to the patient.
5. Patients know what health services can be obtained at which level of health care.
6. Patients will not bypass one level of healthcare and go to the next.
7. The only choice of healthcare available to the patient is the public sector health care.[9]

However, such assumptions do not always hold true.[3, 9] Patients sometimes bypass the lower levels of care to reach the higher levels and sometimes do not reach the higher levels at all.[12] Health workers can initiate referrals that bypass the lower levels of health care and reach higher facilities when they are not fully aware of the treatment capacities of their facilities or

when they know that the patients' family will not seek care at the higher facility and thereby make alternative arrangements for treatment.[12] They may be aware that care can be sought at a health facility that is closer than the facility predicted by the hierarchy.[12] Making such judgment calls can be crucial in saving lives of the patients especially in cases of obstetric emergencies.[26]

1.2.6 Over utilization of referrals

Reasons for over utilization of referrals: Due to inappropriate referrals by the health system

Over utilization can result due to an inappropriate referral initiation by the health system. This does not depend on the perceptions of the patients and their families but is a problem in the proper functioning of the system. Inappropriate referrals can stem from many reasons. A 1987 WHO expert committee report on the role of hospitals at the first referral level states that a common reason for inappropriate referrals being initiated by health workers is a **lack of knowledge of the various treatment options available** at the different levels.[3] Lower levels can off-load patients to higher levels through uncontrolled inappropriate referrals. It could be **due to overburdening of cases in the lower levels**.[3] **Diffidence of health personnel due to insufficient training** can make them feel that they do not have the skills required to treat a condition that otherwise doesn't warranty a referral.[3] Vigiser et.al. studied the over utilization of referrals to the emergency department in a psychiatric hospital in Israel and found that only one third of all the referrals of mental illnesses to the emergency department were justified. Most of the referrals were inappropriately initiated by the physician, probably due to a lack of training to handle the cases.[27] Another study by Jenkins in 1991 in the United Kingdom also found that a possible lack of training led the general physicians to not utilize the available resources completely and initiate inappropriate

referrals.[28] In the U.S.A, Donohoe et.al. observed that a third of the referrals by generalists could be averted but for insufficient training and their lack of confidence in diagnosis and management.[29]

Picano et.al. in their 2006 audit of 350 consecutive stress echocardiograms in Brisbane, Australia and Pisa, Italy found that 98 out of these 350 patients referred to higher diagnostic services had been inappropriately subjected to stress echocardiography. The most important reasons included using stress echocardiography as a first line test, doing it as a part of regular follow up and repeating the test even when there were no clinically detectable changes noted in the patient. These findings suggest that the overutilization of referrals for higher diagnostics occur due to a **trend of increasing utilization of technology**.[30]

Prominent non-medical factors associated with inappropriate referrals were **meeting the community's expectations** and **patient's request for a referral**.[29]

1.2.7 Self referrals- over utilization or patient autonomy?

Self referrals, for the purposes of this study, refers to the bypassing of lower levels of health care by patients and directly going to the centres higher up in the hierarchy. It is a common phenomenon seen globally. Opinion on the appropriateness of self referrals is divided. According to some, self referrals decrease the efficiency of health system functioning by burdening the higher levels of health care with cases that could have well been managed at the lower levels of care.

One of the most common factors leading to self referrals by patients is **a perception of a better quality of healthcare in referral centres**. People have a tendency to bypass the lower levels of health care if they believe that the quality in the higher level specialty hospitals is better.[16] This perception follows closely with a **lack of trust in the lower levels**

of healthcare. People lack trust in the treatment provided at the lower levels of health care and directly go to the higher level hospitals believing that the treatment there is of better quality.[3] This is exacerbated by a **lack of trust in the public health system** and a **preference for the private sector** for all kinds of treatment. A 2013 study in Chennai, Tamil Nadu by Gopichandran and Chetlapally tried to qualitatively study the dimensions and determinants of trust in the health system by conducting thirty five in depth interviews. Even in Chennai which has a good network of public healthcare facilities, there was a preference for treatment in the private sector.[31] Such a private preference makes people seek treatment in higher levels of private hospitals even when free public sector healthcare was available nearby. T.R. Dilip in his 2009 secondary analysis of the National Sample Survey Organization data on inpatient care in the Indian state Kerala, from three different periods- 1986-87, 1995-96 and 2004, also found an increasing private preference for treatment. Such a private preference exists in both the richer as well as the poorer groups, however, in the poorer groups it poses to be a barrier in the long run because after using up all their resources in private health care, low income groups then tend to avoid further hospitalization altogether, adversely affecting treatment outcomes.[32] Another reason for bypassing lower levels of health care, suggested by a WHO expert is that the community members might **not be aware of the capabilities of their local health facilities**.[3] This is related to the perception of their illness severity. A 1997 survey by Forrest and Reid of physicians of the American Medical Association noted that in many instances patients or their family members falsely perceived their illness to be very severe and beyond the management capabilities of the local health facilities.[33] Another study in Japan, conducted between October 1999 and February 2000, noted the increasing trends of self referrals in Japan and found that the self referred patients were systematically different

from the non self referred patients and that they had a higher tendency to have abnormal illness behavior like somatization.[34] Such **inflated perceptions of severity of illness** can also lead to self referrals to higher health care.[33, 34]

A 1995 Dutch study examined two mechanisms by which self referrals to a free emergency department in a new hospital could be reduced. One of the ways was to refer the patients back to GPs but this led to great dissatisfaction among the people. The second method was to have specialized centres as alternatives to this free emergency department. However, this second method was not found to be very successful. The study showed that it is possible to reduce self referrals to hospitals but all such methods had their own cost. Sixma and Bakker suggested that a better method would be not to prevent such referrals but to integrate Primary Health Care services into hospital facilities.[35]

Other studies take the viewpoint that the presence of options to self refer in a health system is not only acceptable but also necessary. At times, it is actually profitable to the patient as well as the system in that it leads to a quicker access to health care and helps reduce the workload in the lower levels. It also ensures that people who are not likely to be correctly referred by a lower level physician to a higher health facility by virtue of aforementioned reasons, find a way to access required care and get treated.

Such self referrals are present even in the urban areas where the lower levels like UHCs (Urban Health Centres) are bypassed for bigger hospitals. Surveys conducted by Atkinson et.al in 1996 in Zambia found a substantial proportion of people bypassing lower level health facilities for higher level ones. Surveys in the out-patient departments(OPDs) of the University Teaching Hospital(UTH) found that 60% of the OPD attendees had come directly to the UTH without attending a UHC first. Of the 40% who had attended a UHC, only 59%

had actually been referred by the UHC meaning that 41% of them had also chosen to self refer themselves to the UTH. This overutilization of referral services was explained by the general perception that the UTH was cheaper than the UHCs. The **availability of more drugs** in the UTH when compared to the prescriptions written in the UHCs that have to be purchased from outside, was the main reason behind this belief that the UTH was cheaper than the UHCs.[36]

Besides, some individuals do not have a social support system meaning they have no one to take care of them and due to their illness, cannot live independently either- such individuals with **a lack of social support** feel that going to a higher hospital for care directly would be better.[3]

The hierarchical model of referral chain is based on the assumption that patients do not exercise their autonomy in choosing a health facility for seeking care. However, in reality, patients and their families do not necessarily fit the assumptions made by the hierarchical model; they **exercise their autonomy and choice in seeking health care**. It could translate to self referrals to higher levels as was noted by Mwabu in his 1987 working paper on economic analysis of Kenya's referral systems.[9]

Some studies, in fact, argued that self referrals were only another way by which patients exercise their right to health and therefore, must be promoted.[37], [38] In a 2005 study conducted by Holdsworth et.al. in Scotland, the provision for self referrals were introduced at twenty nine physiotherapy sites and they were followed up over a year. At the end of the year the group of patients who were referred to the physiotherapist from a GP were compared with the group of patients who self referred themselves, and with the group that self referred only after a suggestion by their GP. The study showed that though the profile of self referred

patients differed significantly from physician referred patients, they only represented another mode of treatment seeking which didn't have much difference in the outcome or perception of severity of illness, but helped the patients in exercising their autonomy.[37] A 1996 retrospective cohort study by Forrest et.al. aimed to study the rate of self referrals, the profile of self-refrring patients and reasons for self referrals among patients that had a Point-of-Service (POS) health plan. This health plan provided both options to the patients, to consult a specialist through gate keeping or to self refer to specialists at a higher out-of-pocket cost. The study showed that majority of the patients who had the option to self refer had not utilized that option. Just having such an option open was sufficient for them. The study went on to say that the negative aspect of unregulated self referrals that are reported by many other studies is actually minimal and that even if it exists, it is counterbalanced by a higher level of patient satisfaction.[38]

Another reason given for self referrals relates to Amartya Sen's concept of 'entitlements'. Over utilization of referrals in the form of self referrals is directly related to the **ability of patients to transform their endowments into entitlements**. It was also found to be true in Ergler et.al.'s qualitative study in Chennai, India where families used up their endowments by transforming them to entitlements to avail the best of health care, even if expensive, and only after they had exhausted their resources did they fall back to a level of health care that they didn't consider as good in quality as the previous ones.[39]

Brown et. al., in their 2010 study evaluating a demonstration site of the National Health Service's (NHS) Improving Access to Psychological Therapies (IAPT) programme at Newham, United Kingdom (UK), found that most of the self referring patients did not significantly differ from the General Practitioner (GP) referred patients in the degree of

severity of their psychological problems. Moreover, the self referred patients were more representative of the true population in that they included more of the ethnic minorities of the UK. Certain complaints like Obsessive Compulsive Disorder (OCD) were found in greater proportion among the self referred patients than in the GP referred patients indicating that these conditions are either missed out by the GP, not given due importance by the GP or not even presented to the GP at all. Self referrals, thus, **opened pathways to accessing health care** by people who might otherwise have not been treated.[40]

Holdsworth et.al. in their 2004 national trial of 3010 patients from 26 GP practices in Scotland found that keeping the option to self refer available to the patient, in addition to the GP referred services, can **increase the cost effectiveness of the health system** and had great financial implications to the Scotland NHS.[41]

Self referrals, thus, can be considered both necessary as well as something that must be eliminated depending on the context.

1.3 Rationale of the study

Management of health conditions requires an array of services ranging from the most basic to the most specialized ones. All the possible requirements often cannot be met at one point necessitating referrals to higher levels of care. Access to such services and their utilization, thus, becomes important in ensuring as well as evaluating the 'Care' provided to a community. It is also a reflection of the political commitment to health. Andaman and Nicobar islands are a remote group of islands off the eastern coast of India in the Bay of Bengal. Health referrals from Andaman and Nicobar Islands have been neglected for long by the Administration. Given that such health referrals are inadvertent in certain conditions, the islanders are forced to seek treatment in mainland India, whether or not they are eligible for

reimbursements. Literature shows that such financial barriers tend to worsen health conditions and lower the referral rates. In Andaman and Nicobar Islands, however, referrals to mainland are the preferred means of treatment by most, even at times when reasonably good options are available in the islands. Such practices lead to a huge out of pocket expenditure on the islanders that can have drastic consequences including a worsening of health. Specific literature on referrals from islands is sparse. Focus on island communities in the developing world is even lesser. This study aims to bring to light the factors associated with referral utilization from island communities with special focus on self referrals that overcome known barriers. It aims to pave the way for further health system researches in Andaman and Nicobar Islands.

Chapter 2

Methodology

2.1 Objectives

Major Objectives

1. To find the pattern of utilization of health referrals to mainland India from South Andaman Islands.

2. To find the factors associated with the utilization of health referrals to mainland India from South Andaman Islands.

3. To find the causes and consequences of such health referrals.

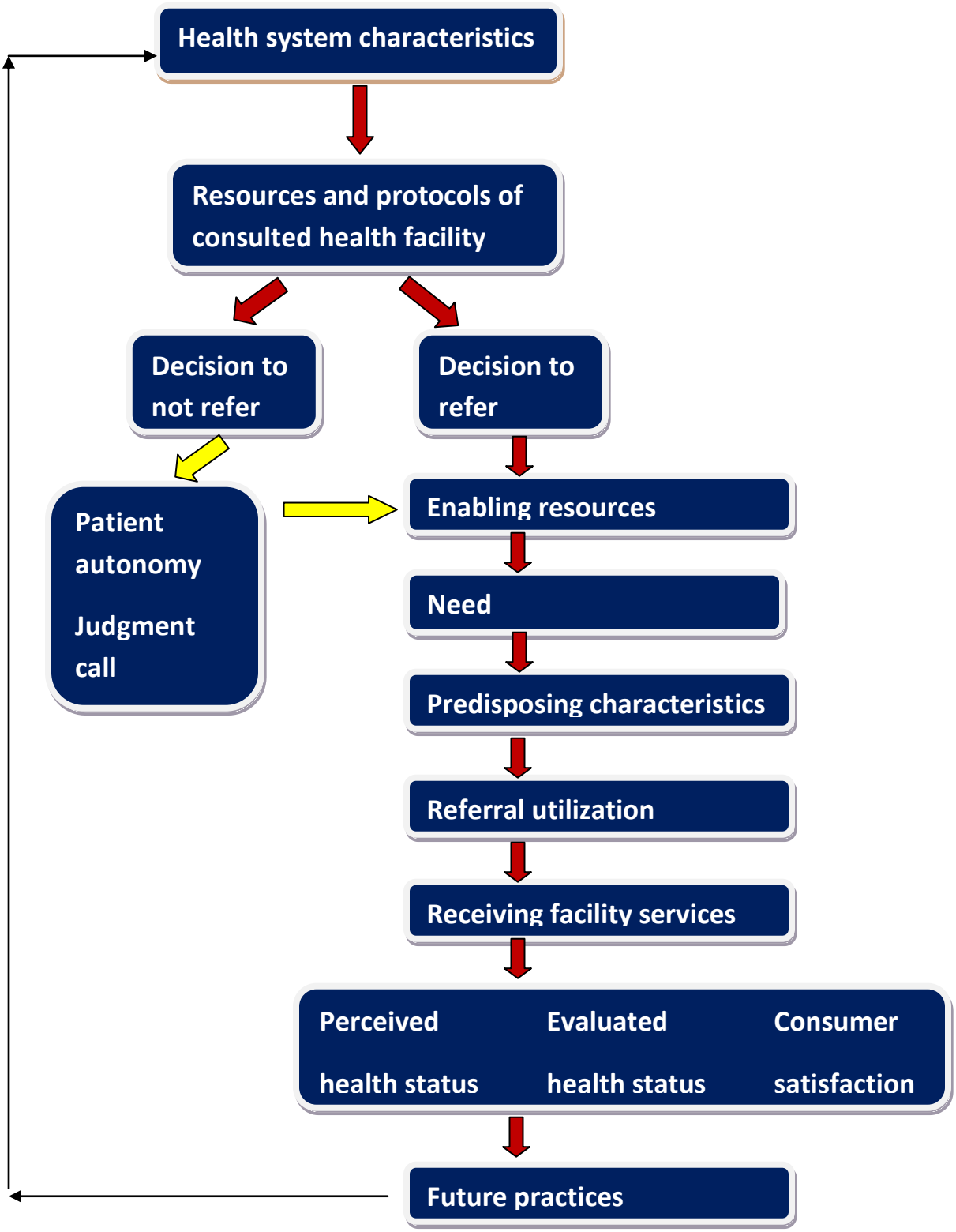
Minor Objectives:

1. To find the proportion of self referrals among all referrals.

2. To find the factors associated with self referrals.

2.2 Conceptual framework

Fig. 2.1 Conceptual framework for health referral utilization



This conceptual framework was used to describe the behaviour of the patients in their utilization of health referrals from the island to mainland India. It is modified from the Andersen and Newman framework of health services utilization and draws inputs from the reviewed literature.[42] The interview schedule for the cross sectional survey and the guidelines for the in-depth interviews were based on this modified framework.

2.3 Study design

A mixed methods research, combining both quantitative cross-sectional survey and qualitative in-depth interviews were undertaken to answer the various research questions. Studying utilization patterns of referrals would touch upon various aspects of the functioning of the health system, including availability of secondary and tertiary health services in the islands, appropriate referral initiation, private preference among the islanders and coping strategies used by the islanders to overcome barriers to utilization, if any. A single study technique was felt to be insufficient to cover the comprehensiveness entailed by the research questions. Creswell et.al., in their 2004 review of five mixed method researches came up with five criteria that all mixed methods studies should define.[43] They are thus explained:

Rationale for mixing: A 2012 systematic review by Wisdom et.al. found that only 2.85% of health services researches used the mixed methods design in spite of their comprehensiveness.[44] For the present study, using a single study design, either quantitative or qualitative, would elucidate only one half of the referral situation of the islands. While the quantitative component would have well described the pattern of referral utilization, it would not have explained why the pattern is how it is. Likewise, a qualitative study alone would give the reasons behind accepting or rejecting referral advice, the consequence of such

decisions and also the strategy adopted by the households in referral utilizations, however, it would have failed to tell the extent to which each of these components exist in the community. A mixed methods research was considered most suitable to answer the research questions and increase the width as well as depth of the study.

Data collection and analysis: Quantitative data was collected using a structured interview schedule and qualitative data collection followed in-depth interview guidelines. Analysis is mostly descriptive with some inferential analysis of the quantitative data. The interviews were coded and analysed thematically.

Priority: Both the cross sectional survey and the in-depth interviews were given equal priority in analysis as well as reporting, with results from one complementing the results from the other.

Implementation: The data was collected sequentially with the in-depth interview informants being chosen out of the general population of South Andaman Island, provided they met the same eligibility criteria as the survey participants.

Integration: Integration of quantitative and qualitative data occurred at two points. One was during data collection, while selecting the in-depth interview informant based on the preliminary findings of the cross sectional survey and second was while reporting the findings.

2.4 Study setting

The study was conducted in South Andaman Island, the largest and most populous island in the South Andaman district which is one of the three districts in the Union Territory (UT) of

Andaman and Nicobar Islands (A&N Islands). Andaman and Nicobar Islands are a remote group of islands off the eastern coast of India in the Bay of Bengal. Port Blair is the capital of the UT and is situated in the South Andaman Island. The distance by air between Port Blair and Chennai is 1330 kms and that between Port Blair and Kolkata is 1303 kms. Chennai and Kolkata are the only two cities to which Port Blair is directly connected by air. There are indirect flights to New Delhi via Kolkata. By sea, Port Blair is connected to Chennai, Kolkata and also to Vishakapatnam, which is at a distance of 1200 km. The island group is closer to other south-east Asian countries like Myanmar, Thailand and Indonesia at different points than it is to mainland India.[45]

The Islands have a population of 3,80,581 of which 62.57% resides in the South Andaman district.[46] South Andaman alone has 87% of the households in the entire district. Most of the population is urban, residing in the municipal area which is divided into 18 wards. There are two other 'census towns' which are considered urban according to census records but continue to be under the Panchayati Raj institutions.

Health care in the Andaman & Nicobar Islands

With 22 Primary Health Centres (PHC), 4 Community Health Centres (CHC) and 124 Sub Centres (SC), the islands have a good network of public health institutions providing primary health care. Each district has a district hospital that provides secondary level health care with some amount of tertiary health care also being provided at the highest referral institute in the islands, G.B.Pant Hospital (GB PANT HOSPITAL) in Port Blair, the capital of the island group. Since the islands are remote and inter island commute is difficult, all PHCs have 10 inpatient beds and all CHCs have 4-70 inpatient beds.[47],[48] Inter island medical evacuations in case of emergencies are prompt and only rarely is any delay reported.[49]

However, flaws ailing the health system are many. A severe shortage of specialists is making it very difficult for the health services to provide proper care to all.[50] This situation fails the purpose of ensuring an infrastructure fit for most speciality treatment. Superspeciality treatment in the public sector is next to nil. As per the medical superintendent office's data, approximately 700 patients are referred per year from G.B. Pant Hospital, Port Blair to mainland India. It constitutes roughly 2.8% of the 25,000 in-patients in G.B.Pant Hospital in a year. Though there are a few promising private clinics and hospitals emerging in the capital town, Port Blair, most superspecialist treatments are still not available in the islands and people prefer to seek treatment in mainland India [51, 52, 53, 54] However, the health services have succeeded to provide basic health care to its people and continually strive to improve the facilities available.

Tertiary referrals from Andaman & Nicobar Islands to mainland India

The cases which cannot be handled in G.B.Pant Hospital owing to lack of infrastructure, improper diagnostics or shortage of required health personnel are referred to mainland India through a process of strong gatekeeping. This referral mechanism has many loopholes.

a) Most patients are referred to any recognized hospital in the mainland with no guidance as to the exact provider or facility. The exception are the BPL patients who can only seek treatment at Sree Ramachandra Medical College and Research Institute, Chennai as part of a Memorandum of Understanding (MoU) between the institute and Andaman and Nicobar (A & N) Administration).

b) Counter-referral that consists of the referred patient seeking treatment form the referral institute and reporting back, with official treatment records is absent.[55]

c) Treatment reimbursements are provided to a very small group of islanders under three schemes- The Central Services-Medical Attendance (CS-MA) where treatment can be sought from Scheme recognized facilities; the Rashtriya Arogya Nidhi for BPL patients- which covers treatment cost upto 1.5 lakh rupees; and full cover for the primitive tribes.[56,57]

These reimbursement schemes leave out a huge proportion of people of the islands.

Measures taken by the A&N Administration to overcome the referral problem

The A&N Administration has made several attempts to reduce the number of referrals to the mainland and provide the required medical treatment in the islands itself. One of the measures has been an MoU with Amrita Institute of Medical Sciences (AIMS), Kochi, whereby superspecialists from AIMS, Kochi hold outreach outpatient clinics free of cost to the patients at the G.B. Pant Hospital, Port Blair at regular intervals. However, the expiry of the MoU in November 2012 was followed by a renewal only after one whole year.[58, 59]

Telemedicine services were launched in 2002 between G.B.Pant Hoapital in Port Blair and Sri Ramachandra Medical College and Research Institute, Chennai.[60] But a lack of required equipments, infrastructure and health personnel, prevents a translation of the advice received through telemedicine. The telemedicine project may be more of a 'patient procurement mechanism' of the commercial hospitals. Besides, the very few specialists serving in G.B.Pant Hospital are not always available for telemedicine consultation.

The Administration also has plans of setting a Medical college with an aim to reduce the healthcare cost to the islanders.[61]

2.5 Study population

Target population: This study aimed to generalize the study findings to residents of all the households in South Andaman district.

Source population: The participants of the study were drawn from households in the South Andaman Island which is the largest and most populous island in South Andaman district.

Study population: The study included households where any member had utilized any medical or surgical facility in the past twelve months (starting from the 17th of June, 2013) or where there had been a confirmation of pregnancy or a termination of pregnancy in the past twelve months (starting from the 17th of June, 2013).

2.6 Sample size estimation

Sample size was estimated using OpenEpi 3.0.1. The prevalence of referral utilization was obtained from an informal exploratory study undertaken by the investigator in December 2013 in order to understand the situation of referrals in the islands. The exploratory study was also conducted in South Andaman island and the lower limit of the 95% confidence interval of the utilization estimated from the exploratory study was found to be 13%, which was taken as the prevalence in this survey. Due to an absence of previous research in this area, the design effect was arbitrarily chosen to be 2. Taking a precision of 5.5% and accounting for 20% loss, the sample size was estimated to be 345.6 which was rounded off to 350. This study calculated the design effect to be 1.2 using Stata software (version 11.2 Statacorp, Texas, USA), which can be used for further research.

2.7 Sampling strategy

Quantitative sampling:

Probability proportional to size (PPS) cluster sampling was adopted since even within the South Andaman Island, the population was mostly concentrated in the urban wards, with fewer households in the villages. Thirty five clusters were chosen from all the villages and wards in the island using PPS, these clusters were wards in the urban and census villages in the rural areas. Villages classified as census town in Census 2011 were taken as urban areas. From each ward/village a cluster of 10 households was chosen. From the main junction of each village and ward, a random road was chosen using the method of allocating numbers to all roads in the junction and choosing a random number. The 1st house in this road was chosen as the first house to be visited. Subsequently every 5th house in the same direction was chosen until the cluster size of 10 households was reached. In each of the households all members who meet the inclusion criteria for individuals were included to aid in intra-household analysis of referrals. In villages and wards that were assigned with more than one cluster through the PPS sampling, the starting points of the clusters were the centre, the northern, southern, eastern and western ends of the village/ward, in that order.

Qualitative sampling:

Informants for the in-depth interviews were chosen from among the survey participants. Outliers were identified throughout the survey as were respondents that seemed to fit into a typical referral utilization pattern. The choice of informants was guided by the conceptual framework, the reviewed literature and the exploration of the referral situation conducted in December 2013. The final choice of the informants was purposively made by the investigator

to answer the research questions. Two to three informants in each of the main domains of causes and consequences would be interviewed with a minimum of 10 interviews aiming for saturation.

2.8 Inclusion criteria

1. Households where any member had utilized any medical/surgical facility in the past twelve months (beginning from the 17th of June, 2013)
2. Households where there had been confirmation of a pregnancy or its termination in the past twelve months. (beginning from the 17th of June, 2013)
3. Within households, all members who had utilized any medical/surgical facility in the past twelve months (beginning from the 17th of June, 2013)
4. Within households, all members who had confirmation of a pregnancy or its termination in the past twelve months. (beginning from the 17th of June, 2013)
5. For the in-depth interviews, only the chosen informants who consented for audio recording of the interviews were included.

2.9 Exclusion criteria

1. Households where there were no adult respondents who can communicate in Hindi-Urdu/English.
2. Households with no coherent/adult respondents at the time of the visit.
3. Households which are closed at the time of the visit.

2.10 Replacements and plan for non-responder analysis

Households which did not consent were recorded as non-responders. Households which are closed/have no adult /coherent /Hindi-Urdu/English speaking respondent were replaced by the next household in the same direction. A record of all such replacements was maintained and documented along with the non-responders. All referrals that ended in mortality as an outcome during the reference period were also included in the study.

2.11 Operational definitions

Physician Referral: Any advice, written or otherwise, given to an individual of South Andaman Island by any physician, to seek any preventive, diagnostic, treating or rehabilitative health care from anywhere in mainland India.

(A mere hint by the doctor that a better treatment modality is available in the mainland was not considered as a physician referral-such choice decisions were included under self referrals)

Completed physician referral: A referral advice which was complied with.

Self-referral: A referral initiated by the patient or his/her family/friends without an advice of referral by the physician.

2.12 Study tools

The cross sectional survey was conducted using an interview schedule which was developed for this study based on the conceptual framework, reviewed literature and the exploratory study conducted in December 2013. The interview schedule was translated into Hindi in the

locally spoken dialect and was pilot tested in 10 people from South Andaman Island. Both English and Hindi interview schedules were used during the study.

The in-depth interview guidelines were also developed for this study based on the conceptual framework, reviewed literature and the exploration of the referral situation undertaken in December 2013. Modifications were made during the survey based on new findings.

The format of the interview schedule and the in-depth interview guidelines are provided as Annexure.

2.13 Data collection

Data collection was done by the investigator alone. The cross sectional survey was conducted between 17th June 2014 and 21st July, 2014. Written informed consent was sought from the respondents before proceeding with the survey. Of the respondents who didn't consent for the study, a few basic responses were sought for the non-responder analysis. Criterion validity was assessed for a subsample of 35 households (10% of the sample size) that reported utilizing referrals to mainland. It was in the form of any referral slip, prescription form, discharge summary or any other formal document confirming utilization of referral to mainland India. The household data and data on the number of household members who had been referred and utilized referrals were collected from the primary respondents but individual data on referrals were collected from the concerned informants who had actually been referred. If they didn't consent to participate in the study, a separate non-responder analysis was done for them. For the referred informants who were not present at the time of the visit to the household, permission was sought to contact them over phone. If they could not be contacted over phone, their data was marked as "not available".

During the survey, possible informants for the in-depth interviews were identified and permission taken to contact them again for the interview. A time was chosen based on the convenience of the informants. Thus, the survey and in-depth interviews were carried out in the same time frame. A total of 10 in-depth interviews were conducted aiming for saturation, only after written informed consent for the interviews with a special focus on audio recording of the interviews were taken. Permission was also sought to contact the informants again for any clarifications or for any other information since qualitative data collection is an iterative process.

2.14 Data analysis

Data from the survey was first analysed descriptively which gave the baseline of the pattern of referral utilization which is one of the primary objectives of the study. The pattern was further explored using bivariate analysis which was done in SPSS version 21 (IBM) using Ch-square and Fisher's exact test. Findings that were significant in the bivariate analysis and also judged to be important by the investigator were built into a multivariate analysis model done through binary logistic regression. Sub group analyses were done wherever judged to be necessary.

The in-depth interviews were transcribed and read and re-read to identify codes. The codes were pre-informed by reviewed literature. The codes were then collapsed into broader themes and linkages between the themes were identified. The interview transcripts were read many times during the process to better understand the broader themes as also their linkages and confirm the findings. A conceptual framework was developed out of the findings. The survey was used as a means of triangulation by methods.

2.15 Data storage

The interview schedules, audio recordings and transcripts are kept safely with the sole investigator who also bears complete responsibility for the safe keeping of the data as well as breach of confidentiality, if any. Data will be preserved with the investigator for future reference. All hard copies will be kept safely sealed in an envelope. The entered data in the computer will be password protected.

2.16 Ethical considerations

The study did not pose any risk to the respondents in the survey or the informants in the interviews. The privacy and confidentiality of the information given to the investigator was upheld during the study and will be upheld even in the future. Written informed consent was taken from all participants and details about the investigator were given to each household to facilitate clarification of any doubts regarding the study that arose among the participants. A clearance was obtained from the Institutional Ethics Committee before the commencement of the study (Reference number: SCT/IEC/600/JUNE-2014)

2.17 Dissemination of results:

All attempts will be made to bring the findings of the study to the notice of the policy makers by trying to publish the findings in journals and presenting in conferences. Articles will be written to the local newspapers to bring the attention of the islanders to the findings of the study, especially in case of a finding of high self referrals.

Chapter 3

Results and Explanations

3.1 Characteristics of the respondents and their health seeking behaviour

3.1.1 Socio-demographic characteristics

A total of 436 households were visited in 35 randomly selected clusters. Of them, 86 households did not meet the inclusion criteria and were replaced by the next household. From the remaining 350 households, seven did not consent to be a part of the study and were classified as non-responders. The most common reason given for non-response was 'shortage of time'. There was no specific pattern noted among the non-responders and they were excluded from further analysis. The final sample had 343 households (response rate of 98%). Table 3.1 shows the socio-demographic profile of the households. Most of the households were urban (56.6%) and had Hindu informants (61.5%), as was expected from a random sample from the South Andaman Island population. A majority of the households (63.8%) reported having an average monthly expenditure less than 14999 INR. The highest educational status of any member in the household was captured with a view that any educated member could affect the health decisions being taken for the entire household. There were no households without any literate member. Though there was a small proportion of households where the highest attained education was only up to the primary school level (2.3%), the majority of the households had at least one member who had completed some form of diploma, graduation or above (62.7%).

The eligibility criteria to include households in the study was having at least one member who had utilized some form of health service in the past one year. On an average, the households had two members with a history of health care utilization in the past one year.

Around 22.7% of the households had any form of health referral to mainland in the past one year. This is similar to the findings from the exploratory pilot study carried out in December 2013, where 25% of the households had some form of referral.

Table 3.1: Socio-demographic profile of the eligible households

		N=343 (100%)
Location	Rural	149 (43.4)
	Urban	194 (56.6)
Religion	Hindu	211 (61.5)
	Muslim	79 (23.0)
	Christian	49 (14.3)
	Sikh	4 (01.2)
Average monthly expenditure	Below 5000 INR	31 (09.0)
	5000- 14999 INR	188 (54.8)
	15000 – 24999 INR	65 (19.0)
	25000 INR and above	19 (05.5)
	Don't know	40 (11.7)
Highest education by any member	Primary	8 (02.3)
	High School	37 (10.8)
	Higher secondary	83 (24.2)
	Diploma/Graduate	135 (39.4)
	Post graduate and above	80 (23.3)
Any health service utilization in the past one year	Number of members per household	2 (2.18 +/- 1.146)
Referral utilization of households in the past one year.	At least one referral	78 (22.7)[1]
	No referrals	265 (77.3)
	At least one completed physician referral	15 (04.4)
	At least one self referral	64 (18.7)

1 Piloting (last December) showed 25%, to account for telescoping, we chose the lower CI limit for sample size estimation. This was 13%

From the 343 households, a total of 749 members were found to have utilized some form of health service in the past one year. The socio-demographic profile of these users is presented in table 3.2. The table also provides a pattern of utilization of health services in the South Andaman Island.

Table 3.2: Socio-demographic and referral profile of users of healthcare services

		N=749(100%)
Location	Rural	324 (43.3)
	Urban	425 (56.7)
Age (in years)	0-9	82 (10.9)
	10-19	99 (13.2)
	20-29	111 (14.8)
	30-39	130 (17.4)
	40-49	105 (14.0)
	50-59	105 (14.0)
	60-69	84 (11.2)
	70 and above	33 (4.4)
Sex	Male	325 (43.4)
	Female	424 (56.6)
Religion	Hindu	434 (57.9)
	Muslim	186 (24.8)
	Christian	122 (16.3)
	Sikh	7 (00.9)
Marital status	Married	438 (58.5)
	Single	252 (33.6)
	Others[2]	59 (07.9)
Residential Category[3]	Pre-42	336 (44.9)
	10 years	195 (26.0)
	Settlers	185 (24.7)
	CG employees	11 (01.5)
	ST-Nicobarese	10 (01.3)
	Don't know	8 (01.1)
	Other non-islanders	4 (00.5)
Relation to head of the household	Son/daughter	241 (32.2)
	Self	214 (28.6)
	Spouse	157 (21.0)
	Others[4]	137 (18.2)

2 Others include 'widowed', 'divorced'; 3 Specific to Andaman Nicobar Islands: Pre-42-living in the islands since before 1942; Settlers- brought to the islands by the British/Indian governments; 10 Years- have lived in the islands for at least 10 continuous years; CG- Central Government; ST-Scheduled Tribe; ; 4 Others include in-laws, parent, grandchild, sibling, nephew/niece.

Table3.2 contd.

		N=749 (100%)
Occupation	Homemaker	218 (29.1)
	Student	179 (23.9)
	Regular Govt. employee	128 (17.1)
	Private office employee	84 (11.2)
	Others[5]	140 (18.7)
Utilization of health services in the islands in the past one year.	G.B. Pant Hospital	453 (60.5)
	Other Govt. health centres	265 (35.4)
	Private hospital	261 (34.8)
	Super specialist visits at G.B. Pant Hospital	12 (01.6)
	Super specialist visits at private clinics	02 (00.3)
	Telemedicine – private	03 (00.4)
	Indian systems of medicine	82 (10.9)
	Self treatment based on advice from mainland doctors	05 (00.7)
	Self care	11 (01.5)
	Dua taaveez and traditional healers	07 (00.9)
	None (Went to mainland directly)	15 (02.0)
Reason for utilization of health service anywhere.	General complaints- fever, cough, master check up	324 (43.2)
	NCD risk factors, stroke, thyroid complaints	137 (18.3)
	Obstetrics and gynaecology related conditions	51 (6.8)
	Surgical and Orthopaedic complaints	39 (5.2)
	Musculoskeletal complaints	27 (3.6)
	Other specialty related complaints[6]	100 (13.4)
	Super specialty related complaints[7]	71 (09.5)
Referral utilization	No referrals	643 (85.8)
	Any form of referral	106 (14.2)
	Self referral	89 (11.9)
	Referred by a doctor and complied	15 (02.0)
	Referred by a doctor but not complied	02 (00.3)

5 Others include 'other Govt. employees', 'retired', 'student', 'unemployed', 'child', 'mentally challenged'

6 Includes 'respiratory', 'dental', 'ophthalmologic', 'skin related', infectious diseases' and 'psychiatric' complaints, with no single category > 3%

7 Includes 'cardiology', 'gastroenterology', 'neurology', 'oncology' and 'nephrology' related medical and surgical complaints with no single category >3%

The sample had more urban participants (56.7%) than rural (43.3%). The median age of the sample was 35 years and ranged between less than one completed year of age to 95 years. The sample had more females (56.6%) than males (43.4%) and more Hindus (57.9%) than other religious denominations (42.1%). There were more married users (58.5%) than singles and others (41.5%) but this could be due to a higher proportion of users belonging to the middle aged group.

Distribution of the responders across their 'residential category' is also shown in table 3.2. In the present study sample from South Andaman Island, the Pre-42s constituted the single largest 'category' of users (44.9%). This could be since South Andaman Island is a very old settlement and is home to most of the Pre-42s. The '10 years' category made up 26% and 'Settlers' made up 24.7% of the sample.

The Old Inhabitants, also called Pre-42s, are the people who have been/are the children/spouses of people who have been residing in the islands since prior to 1942, mainly descendants of the people who had been imprisoned by the British Raj in the islands and who no longer have homes or relations in their native territories. The Settlers are people who had been brought by the British Raj, and later by the Indian government, to the islands with a purpose of rehabilitation/colonization. Most of the Settlers have links to their native states which include West Bengal, Kerala, Jharkhand and Bihar, to name the major ones. Another category is the 10Years- this group includes people who have had at least ten years of continuous education in the islands. This group consists of people from all across India who are more connected to their native states when compared to the previous two categories. These three categories together constitute the 'permanent residents' of the islands and are considered 'locals'. This is in addition to the six primitive tribes that are native to the islands

(classified as ST- Scheduled Tribe), including the Nicobarese who are also found in Port Blair, where many of them are employed. Besides these categories, there are other non islanders who are yet to qualify for the 10Years category and some who are employed with the Central Government (CG employees) and have been transferred to the islands.

Not much difference was noted between the various relations that users had with the heads of their households. Occupation wise, the single largest group was that of homemakers (29.1%). Again, this could be due to the higher representation of females in the sample.

3.1.2 Utilization of healthcare services during the past year

Table 3.2 shows the most utilized health services by South Andaman residents in the past one year. G.B. Pant Hospital, the highest referral hospital within the islands, was found to have the largest proportion of utilization (60.5%) Only very small proportions of users were found to have availed the facilities of super specialists who visit the islands (1.6% in the public sector and 0.3% in the private sector).

The reasons for utilization of health services in the past one year ranged from general complaints like fever, cough, headache found in 43.2% of the users, to widely varying specialty and super-speciality related complaints. Obstetrics and gynaecology was the specialty department with the single largest utilization (6.8%).

Table 3.3 focuses on those users who did not have any form of health referral in the past one year. Majority of the people were not reported to have had complications/ worsening of symptoms while being treated in the islands (98.8%), but, of the small number who were, most (75%) were attributed to non-referral and the informants believed that the complication could have been avoided, had the patient been referred on time.

Table 3.3: Complications while being treated in the islands

	N=643 (100%)
People who reported no complications	635 (98.8)
People who reported worsening of symptoms/complications while being treated in the islands.	08 (01.2)
People who thought such worsening of symptoms/complications could have been due to non-referral	06/08 (75.0)
People whose treatment seeking in the islands ended in death	03 (00.5)
Informants who felt those deaths could be due to non-referral	01/03 (33.3)

There were only two instances of non-compliance with the doctor's advice of referral to the mainland. Both the referrals were made doctors in the public sector because the required diagnostic/treatment facilities were not available in the islands. One of the two cases was of an elderly female being to referred for cancer care; the patient party was given a referral slip and also provided with information on the treatment that could be expected in mainland and on the hospital where the patient should be taken. The non-compliance happened due to financial reasons. The second case is of a child for symptoms that suggest developmental delay. In this case, no advice or information was given by the doctor and no referral slip was given since the mother refused the referral at the very outset, because there would be no one to take care of her other child at home, if she would go the mainland for one child's treatment. While the elderly lady was eligible for reimbursement of money since she was a dependent of a regular government employee, the child was not eligible for reimbursement. Neither of the two had any health insurance or BPL card. Both the patients' families were at least somewhat satisfied with the treatment that was being given in the islands.

3.2 Details of referral care during the past year

Around 14.2% of all the users had had some form of health referral to the mainland. Of these referrals, 84 % were self referrals. Of the 106 users who had had a health referral in the past one year, five users were away for treatment in the mainland at the time data collection for the present study was taking place. These five users (four who had self referred and one who was complying with a physician initiated referral) have been excluded from further specific analysis of the 'self referrals' and the 'physician referral compliance'. Two cases of non-compliance with physician referrals have also been excluded.

Criterion validity, any documentary evidence related to treatment in a mainland facility in the past one year, was noted for all the 99 participants and was found to be lower in the self referral group (38.8%) than the group which complied with physician initiated referrals (50%), as shown in table 3.4. The most common reason cited by families for not showing documentary proof was 'a lack of time' to take out the concerned file.

Table 3.4: Criterion validity of referrals and type of reporting

		Self referral	**Complied physician's referral**
		N=85 (100%)	**N=14 (100%)**
Criterion validity	Yes	33 (38.8)	07 (50.0)
Type of reporting	Self reporting	77 (90.6)	11 (78.6)
	Proxy reporting	08 (09.4)	03 (21.4)

Proxy reporting was accepted only in cases where the referred patient was a minor, or could not answer coherently due to any psychiatric condition or had died after the referral completion.

3.2.1 Reasons for referrals

Tables 3.5 and 3.6 throw light on the various reasons that led to the self referrals as well as physician initiated referrals.

Table 3.5: Factors prior to self referral completion

		N=85(100%)
Reason for self referral	Dissatisfied with service	45 (52.9)
	No particular reason	13 (15.2)
	Facilities for diagnosis/treatment not available	10 (11.8)
	Previously referred by doctor	7 (08.2)
	Clubbed with mainland visit/ hospital close to home in mainland	6 (07.1)
	Others[8]	04 (04.8)
Reason for utilization of health service in mainland India.	Super specialist care[9]	27 (31.8)
	Master check up	13 (15.3)
	Surgical and Orthopaedic complaints	12 (14.1)
	NCD risk factors, stroke, thyroid complaints	8 (9.4)
	Musculoskeletal complaints	4 (4.7)
	Obstetric and gynaecological complaints	3 (3.5)
	Specialist care other than mentioned above.[10]	18 (21.2)
Enquired if this treatment is available in the islands.	Yes	74 (87.1)
Is the treatment available in the islands?	Yes	53 (62.4)
	No	23 (27.1)
	Don't know	09 (10.6)
Reason for choosing the hospital	Previous use	26 (30.6)
	It's reputed	21 (24.7)
	Recommended	17 (20.0)
	Close to home	11 (12.9)
	Knew someone	07 (08.2)
	Apollo clinic locally	03 (03.5)

8 Others include 'no one to take care here', 'problem increased while in mainland' with no category >2.5%

9 includes 'neurology', 'oncology', 'nephrology', 'gastroenterology', 'urology', 'cardiology'; 10 includes 'general medicine', 'psychiatry', 'ophthalmology', 'dermatology', 'dentistry', 'general surgery', 'pediatrics', 'ENT

The most common reason for people to refer themselves to the mainland was dissatisfaction with the services available in the islands (52.9%) followed by 'no particular reason' at around 15.2% while among the physician referrals, a lack of availability of services comes out as the most common reason (92.9%). This gives us an idea that a huge proportion of the self referrals take place not because the services were not available but because people want 'better services'.

Table 3.6: Factors prior to completion of physician initiated referral

		N=14 (100%)
Reason for referral	Treatment facilities not available	08 (57.1)
	Diagnostic facilities not available	05 (35.8)
	High risk	01 (7.1)
Sector	Public	11 (78.6)
	Private	03 (21.4)
Reason for utilization of health service in mainland India.	Super specialist care	10 (71.4)
	Surgical and Orthopaedic complaints	03 (21.4)
	Specialist care other than mentioned above.[11]	1 (07.2)
Consulted the doctor/facility recommended by the doctor in the islands	Yes	08 (57.1)
	No recommendation by the island doctor	06 (42.9)
Consulted any other doctor/facility too	Yes	03 (37.5) [n=8]
Reason for different consultation	Knew someone	1/3 (07.1)
	No doctor	1/3 (07.1)
	Traditional method	1/3 (07.1)

11 includes 'ophthalmology' referral by a private sector doctor.

Most of the self referrals (31.8%) as well as physician initiated referrals (71.4%) were for super specialist care. This is explained by a sheer lack of consistent super specialist care in the islands. The super specialists from the mainland cannot, probably, treat all the patients in the short visits from time to time. However, even cases that require specialist care are

sometimes referred to the mainland by the doctors (28.6%) or become self referred cases. A staggering 52.9% of the self referred cases were for complaints that required specialists who are available in the islands. Whether these complaints could have been treated in the islands or not and whether they would have been referred by the physician too, had the self referral not taken place, is a matter that would require a separate analysis of the health system. Of all the individual specialist departments, Surgery and Orthopaedics together account as the single largest speciality demanding referrals; 12 (14.1%) of self referrals and three (21.4%) of physician referrals have been in this department alone. Another large chunk of self referrals (15.3%) were for 'Master check-ups' that include 'packages' of investigations offered by some high end private hospitals in the mainland. These 'packages' include some baseline investigations that are available in the G. B. Pant Hospital as well as some other cardiology specific or oncology specific investigations and scans that are not available in the islands or would not be performed in GB Pant Hospital without obvious symptoms.

3.2.2 Factors associated with the referral process

In table 3.7 we see that the proportion of self referrals that could be treated in a single visit was higher (75.3%) than the proportion of physician referrals that were treated in a single visit (64.3%). This could indicate that the nature of the cases referred by physicians is more severe and requires more visits than self referrals. We note that while physician referrals that require more than one visit peak at two-three visits to mainland (80%), self referrals that require more than one visit peak at more than three visits (57.2%). This could again be a reflection of 'dissatisfaction to service' available in the islands or a tendency of private hospitals in the mainland to 'trap' their clientele.

Majority of the patients, in both the self referred group (76.5%) as well as the physician referred group (57.1%), did not receive any reimbursement from the government and the majority used their savings (98.8 % in the self referrals and 92.9% in the physician referrals) to meet the remaining expenses for referral care (whether or not reimbursements were provided).

Table 3.7: Factors associated with the referral process

		Self referral	Complied physician's referral
		N=85 (100%)	N=14 (100%)
Treatment over in one visit	Yes	64 (75.3)	09 (64.3)
No. of visits, if treatment not over in one visit	1	02 (09.5) [12]	00 (0.0)
	2-3	07 (33.3)	04 (80.0)
	>3	12 (57.2)	01 (20.0)
Duration of stay	<=7 days	25 (29.4)	02 (14.3)
	8-14 days	20 (23.5)	05 (35.7)
	15-30 days	17 (20.0)	04 (28.6)
	>30 days	23 (27.1)	03 (21.4)
Reimbursement by Govt.	Yes, much of it	03 (03.5)	01 (07.1)
	Yes, some of it	17 (20.0)	05 (35.8)
	No	65 (76.5)	08 (57.1)
Remaining expenses	Savings	84 (98.8)	13 (92.9)
	Loan - friends/family	13 (15.3)	06 (42.9)
	Bank loan and savings	02 (02.4)	00 (0.0)
	Mortgage and savings	01 (01.2)	00 (0.0)
	Selling assets	00 (0.0)	01 (07.1)
LG/MP Fund[13]	No	85 (100.0)	13 (92.9)
	MP Fund	00 (0.0)	01 (07.1)

12 Treatment is not over, more visits required.

13 Lieutenant Governor/ Member of Parliament relief fund, which can be availed for treatment in the mainland by those who are Below Poverty Line.

3.2.3 Expenditure incurred for the referral process

Table 3.8 shows that while the median indirect expenditure for a mainland health referral is roughly the same for both self referrals (50,000 INR) and physician referrals (60,000 INR), there is a huge difference in the median direct expenditure ranging from 15,000 INR in the self referred group to 1,00,000 INR in the physician referred group. This could again be an indication of the nature of illness for which referrals have taken place with physician referrals being more severe.

Table3.8: Expenses incurred during referral completion

		Self referral	**Complied physician referral**
Direct expenditure	Mean	39,600 INR +/- 68,120	1,61,000 INR +/- 2,07,800
	Minimum	1,000 INR	1,000 INR
	Maximum	3,50,000 INR	8,00,000 INR
	25^{th} percentile	6,000 INR	37,000 INR
	50^{th} percentile	15,000 INR	1,00,000 INR
	75^{th} percentile	40,000 INR	2,00,000 INR
Indirect expenditure	Mean	52,300 INR +/- 34,760	82,700 INR +/- 92,880
	Minimum	0 INR	10,000 INR
	Maximum	2,00,000 INR	3,50,000 INR
	25^{th} percentile	25,000 INR	40,000 INR
	50^{th} percentile	50,000 INR	60,000 INR
	75^{th} percentile	70,000 INR	72,500 INR

We note two cases of bank loans and one of mortgage in addition to savings to meet the expenses for self referrals, again highlighting how people are ready to mobilize resources for treatment in the mainland even when not referred by their treating doctor in the islands.

3.2.4 Factors influencing referral completion

Table 3.9 shows the factors that positively influenced the referral completion. Almost all the participants (96.5% of those who were self referred and 100% of those who were referred by a physician) had one or another factor that positively influenced their referral completion.

Table 3.9: Factors influencing referral completion

		Self referral N=85 (100%)	Complied physician referral N=14(100%)
Referral slip	Yes	NA	10 (71.4)
Information given by doctor on expected treatment	Yes	NA	08 (57.1)
Information on whom to contact	Yes	NA	08 (57.1)
Eligible for reimbursement by the govt.	Yes	44 (51.8)	08 (57.1)
Eligible of state support on the basis of BPL/RAN card status.	Yes	05 (5.9)	01 (07.1)
Health insurance holder	Yes No Don't know	01 (1.2) 83 (97.6) 01 (1.2)	00 (0.0) 14 (100) 00 (0.0)
Previous history of referral	Yes No Missing data	59 (69.4) 26 (30.6) 00 (0.0)	06 (42.9) 07 (50.0) 01 (07.1)
Friends/relatives in mainland	Yes	51 (60.0)	05 (35.7)
Any other help there	Yes[14]	09 (10.6)	14 (100.0)
Clubbed with non health visit	Yes	23 (27.1)	NA
Factors facilitating self referral	Any factor present No factor present	82 (96.5) [15] 03 (3.5) [17]	14 (100.0) [16] 00 (0.0)

14 includes language, accommodation, knowing someone at the hospital

15 includes 'eligible for reimbursement by the govt.', 'eligible for state support on the basis of BPL/RAN card status', 'health insurance holder', 'previous history of referral', 'friends/relatives in mainland', 'any other help there', 'clubbed with non-health visit'.

16 includes 'referral slip', 'information given by doctor on expected treatment', 'information on whom to contact', 'eligible for reimbursement by the govt.', 'eligible of state support on the basis of BPL/RAN card status', 'health insurance holder', 'previous history of referral', 'friends/relatives in mainland', 'any other help there'

17 includes one referral for super specialist care, one for specialist care and one for master check-up.

It varied from getting a referral slip by the referring physician (71.4%), to having a previous history of referral (69.4% among the self referred and 42.9% among physician referred) to having friends/relatives in the mainland (60.0% of the self referred and 35.7% of the

physician referred).We note that of the physician referrals 42.9% patients and their families received no information on what treatment and procedures they could expect in the mainland hospitals and whom to contact when there. While this is not the majority, it is a big proportion, nevertheless. A huge majority of the self referrals (96.5%) and the entire physician referral group (100%) had at least one factor which could facilitate the completion of the referral.

3.2.5 Patients' experiences in the referral process and subsequent care

Table 3.10 shows patients' satisfaction with the referrals and choice of subsequent care.

Table 3.10: Patients' satisfaction with the referral

		Self referral N=85 (100%)	**Complied physician referral N=14(100%)**
Satisfied with referral	Totally	73 (85.9)	10 (71.4)
	Somewhat	07 (08.2)	02 (14.3)
	No	05 (05.9)	02 (14.3)
Easy	None	38 (44.7)	05 (35.8)
	Family	35 (41.2)	03 (21.4)
	Nice staff/treatment	07 (08.2)	02 (14.3)
	Language	04 (04.7)	02 (14.3)
	Knew doctors	01 (01.2)	01 (07.1)
	Car service in Chennai	00 (0.0)	01 (07.1)
Difficult experience	Financial alone	28 (32.9)	04 (28.7)
	None	23 (27.1)	02 (14.3)
	Journey alone	12 (14.1)	01 (07.1)
	Financial and journey	08 (09.4)	01 (07.1)
	Language/food/responsibilities	07 (08.2)	03 (21.4)
	Language/food /responsibilities with financial/journey	05 (05.9)	03 (21.4)
	Treatment process	02 (02.4)	00 (0.0)
Continued care from	Mainland facility	28 (32.9)	02 (14.3)
	Any island facility	25 (29.4)	03 (21.4)
	Both the places	12 (14.2)	05 (35.7)
	Not required	16 (18.8)	03 (21.4)
	Not followed up	04 (04.7)	01 (07.2)

A major proportion of the self referred group (94.1%) as well as the physician referred group (85.7 %) were at least somewhat satisfied of the referral treatment.

Financial aspects were the most difficult for both the groups being reported by at least 42.3% of self referred and 35.8% of physician referred cases, either alone or in combination with difficulties encountered during the journey.

Majority of the people in both groups did not find any factor that made their referral particularly easy (44.7% of self referred and 35.8% of the physician referred cases), however, having a family in the mainland was the single largest factor that was reported as having made the referral process easier in both groups (41.2% of the self referred and 21.4% of the physician referred cases).

3.3 Factors associated with the pattern of referrals

To find the most important factors associated with the pattern of referral, bivariate analysis using Chi-square and Fisher's exact test was performed. The two cases of non compliance with physician referral were included in the 'No referral' group and other variables were suitably regrouped to facilitate analysis.

3.3.1 Socioeconomic factors associated with completed referrals

Table 3.11 shows that of the completed referral in the past one year (both self referrals and physician initiated referrals), most referrals took place in the elderly age group (17.9%). The higher proportion of referrals in the 'Others' category of marital status, which includes widow, widower and divorced sub-categories, could be explained by the fact that those under this category were mostly in the elderly age group (69.5%-not in the table). A higher proportion of referrals was noticed among Muslims (23.7%), the Pre-42s (19.0 %), in the group with higher average expenditure (19.8%) and that with higher education (17.7%).

Table 3.11: Socio demographic profile of people with referrals

		Referral N (%)		Total N	Chi-sq.
		No referral	Any referral	(100%)	p value
Location	Rural	285 (88.0)	39 (12.0)	324 (100)	0.241#
	Urban	360 (84.7)	65 (15.3)	425 (100)	
Age group (yrs)	0-19	171 (94.5)	10 (5.5)	181 (100)	0.001**
	20-59	378 (83.8)	73 (16.2)	451 (100)	
	60 and above	96 (82.1)	21 (17.9)	117 (100)	
Sex	Male	278 (85.5)	47 (14.5)	325 (100)	0.749#
	Female	367 (86.6)	57 (13.4)	424 (100)	
Marital status	Married	364 (83.1)	74 (16.9)	438 (100)	0.001**
	Single	234 (92.9)	18 (7.1)	252 (100)	
	Others[18]	47 (79.7)	12 (20.3)	59 (100)	
Religion	Hindu	376 (86.6)	58 (13.4)	434 (100)	0.000**
	Muslim	142 (76.3)	44 (23.7)	186 (100)	
	Christian and Sikh	127 (98.4)	2 (1.6)	129 (100)	
Residential Category[19]	Pre-42	272 (81)	64 (19.0)	336 (100)	0.002**
	Settlers	170 (91.9)	15 (8.1)	185 (100)	
	10 Years	174 (89.2)	21 (10.8)	195 (100)	
	Others[20]	29 (87.9)	4 (12.1)	33 (100)	
Occupation	Regular govt. employee	102 (79.7)	26 (20.3)	128 (100)	0.017*
	Some form of employment	119 (83.2)	24 (16.8)	143 (100)	
	Not currently employed	424 (88.7)	54 (11.3)	478 (100)	
Relation to head of the household	Self	178 (83.2)	36 (16.8)	214 (100)	0.064
	Son/daughter	217 (90.0)	24 (10.0)	241 (100)	
	Spouse	129 (82.2)	28 (17.8)	157 (100)	
	Others	121 (88.3)	16 (11.7)	137 (100)	
Average monthly expenditure	<15000	428 (89.5)	50 (10.5)	478 (100)	0.002**
	>=15000	146 (80.2)	36 (19.8)	182 (100)	
	Don't know	71 (79.8)	18 (20.2)	89 (100)	
Highest education in the household	Upto school	274 (91.9)	24 (8.1)	298 (100)	0.000**#
	Any diploma/ graduate and above	371 (82.3)	80 (17.7)	51 (100)	
Total		645 (86.1)	104 (13.9)	749 (100)	

18 Others include 'widowed', 'divorced'; 19 Specific to Andaman Nicobar Islands: Pre-42-living in the islands since before 1942, Settlers- brought to the islands by the British/Indian governments, 10 Years- have lived in the islands for at least 10 continuous years; 20 Others includes Central Government employees, Scheduled Tribe- Nicobarese, Other non-islanders, Don't know residential category; *p<0.05; **p<0.01; # Fisher's exact test p-values

3.3.2 Association of referrals with health seeking pattern prior to referral

In table 3.12, of those who did not utilize any health service in the islands, there were five who also did not have any referrals in the past one year, but they had had referrals prior to that and are on medications which they order from the mainland and any further advice is also sought from their treating physicians based in mainland. Apart from the group that did not seek any care in the islands, the highest proportion of referrals is seen in those participants who had utilized any form of private allopathy care in the islands. This could either be due to a preferential referral by the private health centres that have their main hospitals in mainland India or could reflect a possible utilization of private sector in the islands as a last resort by the islanders, before they choose to refer themselves to the mainland out of dissatisfaction even with the private sector.

Table 3.12- Referrals following use of health services in the islands in the past one year.

	Referral N (%)		Total	Fisher's Exact test p-value
	No referral	Any referral		
Public sector allopathy	527 (87.8)	73 (12.2)	600 (100)	0.008**
Private sector allopathy	213 (81.3)	49 (18.7)	262 (100)	0.008**
Indian systems of medicine and others	88 (88.9)	11 (11.1)	99 (100)	0.439
None (direct care from mainland or self care based on advice from mainland doctors)	5 (25.0)	15 (75.0)	20 (100)	0.000**

**p<0.01

3.3.3 Health conditions and referrals

Table 3.13 shows the departments to which the referrals took place. Apart from master check ups which are available only in the mainland, the highest proportion of referrals was seen for super specialist care. Among the specialities, referrals were the highest in the group that had

complaints related to surgery and orthopaedics (38.5%), followed by the group with musculoskeletal complaints (14.8%), NCD related risk factors (8%) and obstetrics and gynaecology (7.8%).

Table 3.13: Department of referral hospital to which the referral took place

	Referral N (%)		Total	Ch. Sq.test p-value
	No referral	Any referral		
General complaints- fever, cough	311 (100.0)	0 (0.0)	311 (100)	0.000**
Specialty related complaints	301 (85.0)	53 (15.0)	354 (100)	
Super specialty related complaints	33 (46.5)	38 (53.5)	71 (100)	
Master check up	0 (0.0)	13 (100.0)	13 (100)	
Total	**645 (86.1)**	**104 (13.9)**	**749 (100)**	

**p<0.01

To see if there was any difference within the group with superspciality related complaints between those who completed referrals (both self and physician initiated) and those who didn't, the profile of all patients with super spciality related complaints was generated (Table 3.14) and compared with the overall referral pattern. Similar profiles were generated for those who had speciality related complaints (Table 3.15) and the findings were compared between the various groups and the overall pattern to note which factors were the most consistent predictors for referrals. The only groups that consistently had a higher proportion of referrals were Muslims, Pre-42s, groups having a higher average monthly expenditure (leaving aside the sub-category that did not know the monthly expenditure) and a higher education status attained by any family member. Most of these associations were also statistically significant.

Table 3.14: Profile of patients who had super-specialty related complaints

		Referral N (%)		Total	Chi-sq. p value
		No referral	Any referral		
Location	Rural	14 (53.8)	12 (46.2)	26 (100)	0.459#
	Urban	19 (42.2)	26 (57.8)	45 (100)	
Age group (yrs)	0-19	4 (50.0)	4 (50.0)	8 (100)	0.968
	20-59	20 (45.5)	24 (54.5)	44 (100)	
	60 and above	9 (47.4)	10 (52.6)	19 (100)	
Sex	Male	21 (51.2)	20 (48.8)	41 (100)	0.470#
	Female	12 (40.0)	18 (60.0)	30 (100)	
Marital status	Married	23 (51.1)	22 (48.9)	45 (100)	0.523
	Single	6 (42.9)	8 (57.1)	14 (100)	
	Others[21]	4 (33.3)	8 (66.7)	12 (100)	
Religion	Hindu	24 (54.5)	20 (45.5)	44 (100)	0.029
	Muslim	6 (25)	18 (75)	24 (100)	
	Christian	2 (100)	0 (0.0)	2 (100)	
	Sikh	1 (100)	0 (0.0)	1 (100)	
Residential Category[22]	Pre-42	16 (41.0)	23 (59)	39 (100)	0.791
	Settlers	8 (53.3)	7 (46.7)	15 (100)	
	10 Years	8 (53.3)	7 (46.7)	15 (100)	
	Others[23]	1 (50.0)	1 (50.0)	2 (100)	
Occupation	Regular govt. employee	9 (64.3)	5 (35.7)	14 (100)	0.312
	Some form of employment	7 (38.9)	11 (61.1)	18 (100)	
	Not currently employed	17 (43.6)	22 (56.4)	39 (100)	
Relation to head of the household	Self	16 (61.5)	10 (38.5)	26 (100)	0.239
	Son/daughter	7 (36.8)	12 (63.2)	19 (100)	
	Spouse	7 (43.8)	9 (56.2)	16 (100)	
	Others	3 (30.0)	7 (70.0)	10 (100)	
Average monthly expenditure	<15000	22 (55.0)	18 (45.0)	40 (100)	0.084
	>=15000	10 (43.5)	13 (56.5)	23 (100)	
	Don't know	1 (12.5)	7 (87.5)	8 (100)	
Highest education in the household	Upto school	10 (47.6)	11 (52.4)	21 (100)	1.000#
	Any diploma/ graduate and above	23 (46.0)	27 (54.0)	50 (100)	
Total		33 (46.5)	38 (53.5)	71 (100)	

21 Others include 'widowed', 'divorced'; 22 Specific to Andaman Nicobar Islands: Pre-42-living in the islands since before 1942, Settlers- brought to the islands by the British/Indian governments, 10 Years- have lived in the islands for at least 10 continuous years; 23 Others includes Central Government employees, Scheduled Tribe- Nicobarese, Other non-islanders, Don't know residential category; #Fisher's exact test

Table 3.15: Profile of patients who had specialty related complaints

		Referral N (%)		Total	Chi-sq.
		No referral	Any referral		p value
Location	Rural	131 (85.1)	23 (14.9)	154 (100)	1.000[#]
	Urban	170 (85.0)	30 (15.0)	200 (100)	
Age group (yrs)	0-19	31 (91.2)	3(8.8)	34 (100)	0.467
	20-59	205 (83.7)	40 (16.3)	245 (100)	
	60 and above	65 (86.7)	10 (13.3)	75 (100)	
Sex	Male	117 (83.0)	24 (17.0)	141 (100)	0.447[#]
	Female	184 (86.4)	29 (13.6)	213 (100)	
Marital status	Married	219 (83.6)	43 (16.4)	262 (100)	0.402
	Single	51 (87.9)	7 (12.1)	58 (100)	
	Others[24]	31 (91.2)	3 (8.8)	34 (100)	
Religion	Hindu	175 (85.0)	31 (15.0)	206 (100)	0.046*
	Muslim	75 (78.9)	20 (21.1)	95 (100)	
	Christian	49 (96.1)	2 (3.9)	51 (100)	
	Sikh	2 (100)	0 (0.0)	2 (100)	
Residential Category[25]	Pre-42	138 (81.7)	31 (18.3)	169 (100)	0.270
	Settlers	72 (91.1)	7 (8.9)	79 (100)	
	10 Years	77 (85.6)	13 (14.4)	90 (100)	
	Others[26]	14 (87.5)	2 (12.5)	16 (100)	
Occupation	Regular govt. employee	53 (75.7)	17 (24.3)	70 (100)	0.013*
	Some form of employment	56 (81.2)	13 (18.8)	69 (100)	
	Not currently employed	192 (89.3)	23 (10.7)	215 (100)	
Relation to head of the household	Self	108 (82.4)	23 (17.6)	131 (100)	0.610
	Son/daughter	58 (86.6)	9 (13.4)	67 (100)	
	Spouse	76 (84.4)	14 (15.6)	90 (100)	
	Others	59 (89.4)	7 (10.6)	66 (100)	
Average monthly expenditure	<15000	188 (87.4)	27 (12.6)	215 (100)	0.264
	>=15000	74 (80.4)	18 (19.6)	92 (100)	
	Don't know	39 (83.0)	8 (17.0)	47 (100)	
Highest education in the household	Upto school	125 (91.9)	11 (8.1)	136 (100)	0.004** [#]
	Any diploma/ graduate and above	176 (80.7)	42 (19.3)	218 (100)	
Total		301 (85.0)	53 (15.0)	354 (100)	

24 Others include widowed, divorced; 25 Specific to Andaman Nicobar Islands: Pre-42-living in the islands since before 1942, Settlers- brought to the islands by the British/Indian governments, 10 Years- have lived in the islands for at least 10 continuous years; 26 Others includes Central Government employees, Scheduled Tribe- Nicobarese, Other non-islanders, Don't know residential category; *p<0.05 **p<0.01; # Fisher's exact test

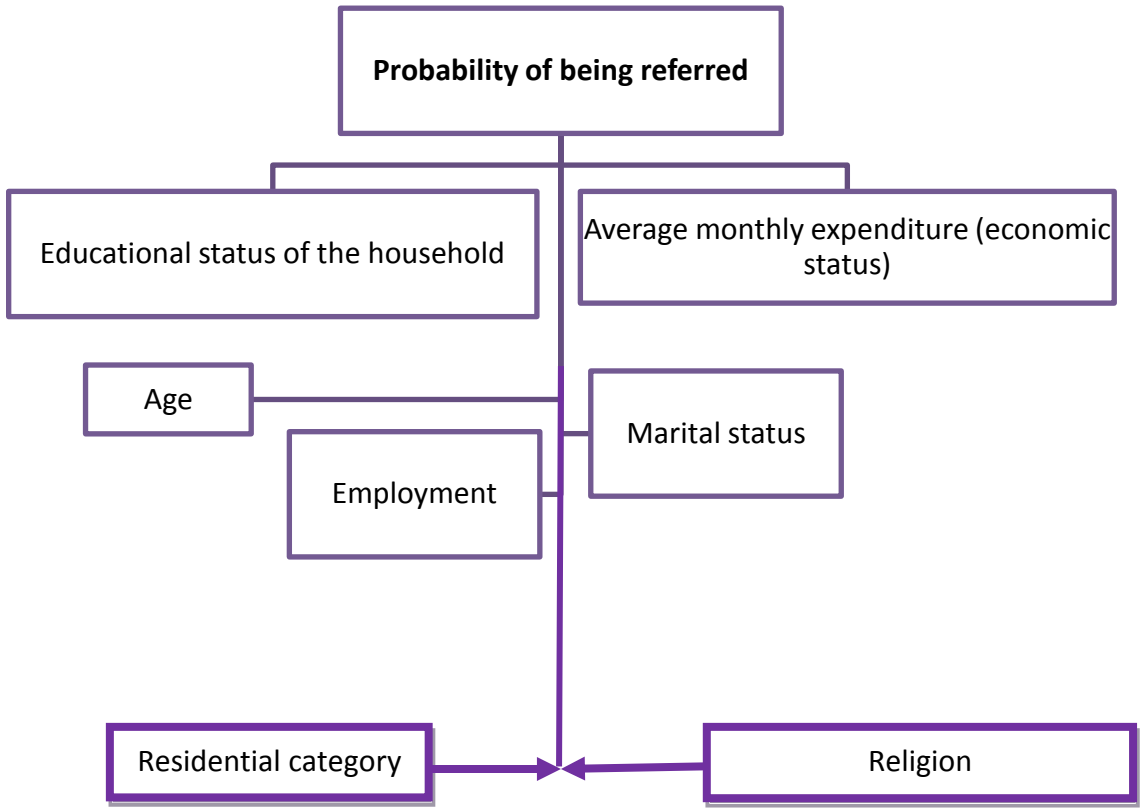
3.3.4 Multi-variate model

The bivariate analysis revealed a high probability of referrals among Muslims and pre-42 categories. However, such a relationship may not be direct. The Muslim link could be explained by the fact that majority of the Muslims in the sample (as is also true for the general population based on common knowledge) were Pre-42s (95.7%) and that it was the Pre-42s who actually had a higher tendency to seek referral care, and not Muslims. Pre-42s themselves were mostly in the higher education (64 %) group and the real link could possibly be through education. Age groups, marital status and occupation, all showed a statistically significant association with the probability of being referred in the overall referral profile (Table 3.2.1), but, neither the pattern of referral probability within the different subcategories of these variables, nor the statistical significance of the association was noted in the various subsets of referral groups. Hence, based mostly on judgment but also drawing from the statistical tests performed, the two most important predictor variables for referral utilization were chosen to be 'average monthly expenditure of the household' and 'highest education by any household member'. Which of these two variables was more proximate could not be decided upon since it is dependent on many other contextual factors.

To find the most important associations, the following steps were taken for multi variate analysis and model building.

Step 1- Hierarchical model building: After identifying the two most proximate predictor variables, a possible association between the various variables and the probability of being referred was drawn(Fig 3.1). Category and religion were identified as distal variables.

Fig.3.1 Hierarchical model showing association between the predictor and predicted variables



Step 2: Effect modification and confounding: The two main predictor variables, 'highest household education' and 'average monthly expenditure' were then stratified across the various subcategories of the other variables to look for any confounding or effect modification of the referral outcome ,with a view to control for the confounders and highlight the effect modifiers. To enable this analysis, both the predictors had to be binary. The binary version of the education variable, as used in the remaining bivariate analysis, was used here. The 'Don't know' sub category of 'average monthly expenditure' was merged with the 'lesser than 15,000 INR' subcategory. Strata specific and crude odds ratios were calculated and compared. All the variables used for stratification were found to be effect modifiers of the two main predictors. A further step of stratifying the two main predictors across each

other showed that ‘average monthly expenditure too’ was an effect modifier of education. Hence, the highest education level attained by any household member came to be the single most important predictor of referral care in mainland India.

***Step 3*:** Collinearity: Marital status, a variable showing significant association with referral probability (table 13) was left out of further analysis because it was also strongly associated with ‘age group’ (Chi square p value 0.000) and the investigator judged that age group would be a better predictor of the referral outcome than ‘marital status’. Likewise there was a strong association between the two distal predictors, ‘Religion’ and ‘Residential category’ (Chi square p value 0.000). Category was judged to be a better predictor of referral outcome than Religion and retained for further analysis. The two most proximate predictors, ‘Average monthly expenditure of the household’ and ‘Highest education status by any member in the household’ were also strongly associated (Chi square p value 0.000). However, both predictors were judged to be important and leaving out any one might bring in bias. This bias of omission was considered graver than the error of collinearity that might occur by keeping both the variables, hence both variables were retained for further analysis.

***Step 4*-** Binary logistic regression: Binary Logistic Regression was performed, first for the distal variables, then adding on the proximate variables and finally running a ‘Backward-Wald’ logistic regression. Since effect modification is an important underlying phenomenon that needs to be explained, all modifiers along with the main predictor were included for model building and obtaining adjusted ORs. The reference groups were chosen based on bivariate findings to aid interpretation.

The analysis found ‘residential category’, ‘highest education attained by any member in the household’, ‘age group’ and ‘average monthly expenditure’ to be significant predictors.

The equation for the regression is

Logit (Referral completion) = -2.997 – 0.902 (Settlers) – 0.653 (10 Years) - 0.322 (Other categories) + 0.672 (Highest household education at diploma/graduate or above) + 1.070 (Middle aged) + 1.098 (Elderly) + 0.534 (Average monthly household expenditure >=15,000 INR)

The attained logit values can then be back transformed to get the probability of positive outcome.

The model predicts that in South Andaman, the middle aged and the elderly have a roughly three times higher odds of seeking referral care in the mainland than those in the younger age groups (</=19 years).

Table3.16: Adjusted odds ratios of the predictors by binary logistic regression

Predictor variables		**Adjusted Odds Ratio**	**p-value**
Age groups	Younger /adolescents	Reference group	
	Middle aged	2.916 (1.450- 5.863)	0.003**
	Elderly	2.997 (1.33-6.738)	0.008**
Highest education by any household member	Upto school	Reference group	
	Diploma/ graduate or above	1.957 (1.186- 3.230)	0.009**
Average monthly expenditure of the household	< 15,000 INR	Reference group	
	>/= 15,000 INR	1.706 (1.074-2.712)	0.024*
Residential Category[27]	Pre-42	Reference group	
	Settlers	0.406 (0.221-0.745)	0.004**
	10 Years	0.521 (0.303- 0.894)	0.018*
	Others[28]	0.75 (0.238-2.204)	0.571

27 Specific to Andaman Nicobar Islands: Pre-42-living in the islands since before 1942, Settlers- brought to the islands by the British/Indian governments, 10 Years- have lived in the islands for at least 10 continuous years; 28 Others includes Central Government employees, Scheduled Tribe- Nicobarese, Other non-islanders, Don't know residential category.

*p<0.05 **p<0.01

The odds of the more educated households having a completed referral was about twice that of the group of households that had school level education as the highest level of education

(Table 3.16). The households which spend more than 15,000 INR as their monthly expenditure (reflecting their higher socioeconomic status) also have a 1.7 times higher odds of being referred than the households which spend lesser than that; this finding is in line with what was found in the literature review preceding this study.

The fourth predictor, which is specific to the Andaman and Nicobar Islands, shows that the Old Inhabitants (Pre 42s) have a two times higher odds of being referred as compared to all other categories.

These findings conform with the findings from the bivariate analysis.

3.4 Analysis of the in-depth interviews

The first two primary objectives were to find the pattern of referrals and the factors associated with them; these objectives were met by the quantitative survey. To answer the third primary objective of finding the causes and consequences, a qualitative methodology was considered most appropriate. A total of ten in-depth interviews were conducted. A purposive selection of consenting informants was made to get an understanding of all kinds of referrals. The eligibility criterion was the same as that for the participation in the survey- the informants should have had a referral (either self referral or a physician initiated referral) in the past one year. Out of the ten informants, there were four females and six males. Half of the informants belonged to the Pre-42 category, which, as found from the survey, is one of the most important features associated with the people who tend to refer themselves to the mainland. Half of the informants were Muslims, this selection is also in line with the finding from the survey where most of the referrals were seen in the Muslim group.

The various categories that arose from the interviews were grouped into themes and the

themes were then arranged to provide a meaningful pathway of the referrals as they take place in the islands.

3.4.1 Previous experiences with health facilities in the islands and mainland

The overarching theme of the referral process in the islands is that of the patients' and their families' previous experiences with the health services in the islands. Bad experiences were remembered vividly, as against the better experiences which hardly found a mention. The most dominant experience was that of dissatisfaction. This finding was also seen in the self referred participants of the survey. This dissatisfaction was towards both the technical quality of the diagnosis and treatment in the islands as well as the behaviour of the doctors and other staff towards the patients. The doctors in the islands were thought of as lacking skills to make 'even simple diagnoses' and give wrong treatment to patients. There have been many cases of negligence in the islands, in the past few years. To add on to this is the extremely rude and patronizing attitude of the doctors. While the private sector is considered somewhat good, on the whole, the care provided in the private sector is not much better than that in GB Pant Hospital. There is a strong indication that accessing good care and good behaviour depends a lot on the 'contacts' that a person has. One informant mentioned that it is not just any 'contact' but having a nurse in the hospital as your relative, that alone can ensure you good behaviour from other nurses.

These not so nice experiences not only shape the decisions of the patients in question but leave a mark on all who hear of these experiences.

The reason for undergoing caesarean section in mainland India was told in this way by one of the informants:

"Everything was alright but I still had a fear since one of my husband's relatives had stillbirth in the government hospital here. Mine was a precious pregnancy and that too of twins……and it's not the only case where something has gone wrong here. Recently one of my friends' maid had her pregnancy spoilt. When she went for check-up she was told the baby's movements are fine but the very next day when the baby stopped moving, they told that the baby has been dead for ten days. And these are all full term babies- not six or seven months but full term babies. So, we thought that since we can afford to go, we will go to Apollo for my delivery."

A special mention should be made of the Pre-42s, a group of people who have been living in the islands since before the year 1942. Due to their presence in the islands from a long time, they had been acquainted with the health system much before the families that moved into the islands later. In earlier times, the facilities in GB Pant Hospital were not much and most of the serious cases had to be referred to the mainland. This utilization of mainland referrals has been normalized in these families and the trend continues even now. One of the Pre-42 informants told:

"We avoid going to GB Pant."
"Even for the normal complaints you do not go to GB Pant?"
"No, not at all."

It has almost become a family tradition of seeking care only in the mainland.

Some Pre-42s also believe that since they are the old inhabitants of the islands, it is unacceptable when a doctor, who is probably new to the islands, behaves rudely to them.

"We went to a lady doctor and her behaviour was very rude. And we belong to this place, we are Pre-42s, it feels bad…they don't even touch us.. she just looked and wrote the medicines. What are we to make of it?"

Past experiences of treatment in the mainland also count. Most of the referral experiences are good, however, any bad instance informs one about where not to go while seeking referral care in the mainland.

"I had taken my mother in law to Apollo and I've seen everything there. They do not treat you there, you just keep on having check-ups; they do not start the real treatment. I didn't like it and I have been treated so often that I know when a treatment is right and when it is wrong. So, I went to Vijaya Hospital."

3.4.2 Choice of health systems

The analysis shows three major health systems catering to the needs of the islanders. One is the public sector in the islands, the other is the private clinics and hospitals in the islands and the final one is that of the hospitals and clinics in the mainland- mostly in the private sector. People use their past experiences to decide whether they should even attempt at seeking care in the islands or directly go to the mainland.

If the patient chooses to take treatment in the islands, the next choice is between the government and the private sector.

3.4.3 Dissatisfaction with the GB Pant Hospital

People's satisfaction with the treatment offered at the highest referral hospital in the Andaman and Nicobar Islands is very low. This dissatisfaction is not limited to the tertiary and secondary health care but is also seen in the primary level care offered there as is evident by what most of the informants had to say. One of them is quoted here

"In my opinion, GB Pant is the worst. I never go there. Whenever I have a problem I consult my private doctor about it, whether it can be treated here or not. If I feel, it is not getting cured, if I am not satisfied, I quickly go to the mainland. I do not risk staying behind."

Another recurring complaint was *"Doctors do not even touch us"* indicative of the bad behaviour of the doctors.

The specialists at GB Pant Hospital ensure a strong gatekeeping by referring only the cases that really need referral care. However, this gatekeeping poses a problem in certain cases when the referrals are delayed till the very end in the hope that the case might get cured in the islands itself. When the doctor finally refers the patient to *"any recognized hospital in Chennai",* the patient is either too serious to be taken to the mainland, or, if manages to reach the mainland hospital, succumbs to the complications. These *"delayed referrals"* form an important part of the dissatisfaction people feel for GB Pant Hospital. It was also pointed out by the informants that the doctors at GB Pant Hospital tend to refer patients based on certain presumptions of who would be able to seek care in the mainland. The doctors, if aware of the financial stability of the patients, tend to refer more often than if they know that the patient is eligible for reimbursements and LG Fund. It is because, in the latter case, there is a chance that the doctor is questioned for his referral decision. However, having *"contacts"* seems to

be a great asset in getting oneself referred. Knowing doctors or doctors who know other doctors or even political groups can ensure a smooth and easy referral, even if, the actual medical condition is not serious enough.

A case of a migrant worker Sameer (name changed), needs mention here who, since he couldn't read English, wasn't even aware of what the doctor had written on his son's OP slip. Sameer's son was not getting cured in the islands and being a migrant worker he did not even have a BPL or identity card of the islands. To avail the LG Relief Fund, it was important that GB Pant Hospital doctors referred him to the mainland. After much *"begging",* he was finally directed to the superspecialists from AIMS, Kochi who visit GB Pant Hospital. Sameer's son was referred by the visiting doctors to Amrita Institute of Medical Sciences, Kochi and at the time of the interview was awaiting response from the Lieutenant Governor's office regarding sanction of the relief fund money.

"They were just saying it orally that the child will not be cured here. We told them not to just say it but to actually give us a referral. They replied that we can anyway not refer you from here. They wrote something in a paper at the bottom and gave me. But I am not that educated, so I showed it to another guy. It read that we are forcefully demanding a referral."

Sameer then started clarifying his doubts regarding his son's treatment with me, so I asked him wasn't he informed of the procedures that his son would undergo in mainland, to which he replied:

"Wo log itna baat karne nahi deta. Kabhi kabhi na jane se..humlog kutta hai is tarah karta…"

(They do not let us talk so much. Sometimes when we go, they treat us as if we were dogs)

One probable reason for "avoiding written referrals" but still "advising" people to go the mainland, was believed to be the doctors' attempt at concealing their incompetence. A formally written referral would be admitting that the specialist at GB Pant Hospital could not deal with the case.

Other problems with the public sector were *"groupism"* in the doctors, whereby, some doctors did not give proper care to the patients who were under treatment of some other doctors and a lack of proper information given to the patient regarding their referral care. Most of these findings are similar to those found by our survey.

3.4.4 The private clinics/ hospitals

The private sector is the last resort of the islanders after they have been dejected of GB Pant Hospital and before they finally refer themselves to the mainland. The treatment and attitude of doctors in the private sector is not much better than the doctors at GB Pant Hospital. Referrals to mainland by a private sector doctor are not questioned since the patients are well aware of the extent of treatment that can be sought in the islands. This is what one informant thought about her referral by a private sector doctor:

"We don't expect much from the local doctors here. The expectation level is very less so whatever she told, I was fine with it. Because we do not expect anything more from the doctors here- whatever they cannot manage, they refer; whatever is beyond them, what they do not understand, they refer."

Private sector is usually preferred with GB Pant Hospital being chosen only when the patients *"don't have any other option".* Of our informants, only four had first gone to GB Pant Hospital. Out of those four, one informant had later switched over to the private sector in the islands before finally self referring to the mainland, one belonged to the lower socioeconomic status and has not been able to complete the referral advice given by doctors at GB Pant Hospital. The other two had to *"beg"* for referral.

There is also a movement between the public and private sector in the islands, mostly from the former to the latter.

3.4.5 Mobilizing resources and overcoming doubts

When the decision to go to mainland for treatment has been taken, the next step is to make arrangements to go to mainland. This includes arranging finances, handing over responsibilities of children and business to others, applying for leave in the schools/offices and others. The patient has to overcome any doubts that arise in his/her heart regarding whether the referral care is worth the money and effort. In such situations, having information on where to go after reaching mainland, having friends and families there or even knowing the local language of the place the referral hospital is situated in, matters a lot. Any failure to make arrangements can cause a fall back into the island health care system until the patient manages to mobilize resources.

Some other reasons for seeking treatment in the mainland without a prior consultation in the islands include a clubbing of the referral care with a visit being made to the mainland for some other non-health related reason, the problem for which care was sought having occurred at the time the patient was already in the mainland for some other reason, and that

the patient was previously referred to the mainland by a doctor and so the patient now continues to take care in the mainland hospital.

3.4.6 Referral experience

The referral experience is invariably good, both in terms of the treatment as well as behaviour and care at the referral hospitals. We must remember that most of these hospitals are private hospitals of good standing such as Apollo Hospitals, Ramachandra Hospital in Chennai, Amrita Institute of Medical Sciences in Kochi and others.

One noticeable feature of the doctors in these hospitals is that they offer information to the patients and make them take decisions for themselves. Even if those decisions are guided by what the hospitals actually aim for, the patients feel that they are in control of their health. The patient ultimately feels that the good care is worth all the money spent. Such good experiences, naturally, further intensify the dissatisfaction towards the island health system and affect future health care choices.

3.4.7 Opinion on the upcoming medical college and need for more private hospitals

People felt that the medical college will be good for the children in the islands who would now get the MBBS seat relatively easily; it would also open up employment opportunities, however, people didn't have much hopes from the medical college when asked if it will help to reduce the referrals to mainland.

When asked if the medical college would be useful, one informant told:

"The medical college will get students easily, but getting faculty is the big question. If they manage to get good faculty, it would be another feather in the cap of Andaman Nicobar Administration."

People did want skilful doctors for the medical college as well as more private hospitals in the islands as this will at least reduce the indirect cost of treatment in the mainland, including air fare, accommodation, travel and food in the mainland. People also mentioned that it would be nice to have family around who can look after you better.

3.4.8 Reproductive health care- The exception

While the general trend seen in the islands was a dissatisfaction and lack of trust in the islands' health systems and a preference for referral care, one condition which stood out from the others was delivery care. The care being provided to expectant mothers is poor. One patient reports of how she was not even tested for blood sugar while pregnant-

"When I was pregnant, I had hypertension and diabetes mellitus (gestational). She (the doctor) couldn't diagnose it. It got advanced and I had to take insulin. I got diagnosed only after I reached Apollo. At Apollo, they asked me why wasn't it checked….. Here, they kept doing other tests, but given the history that my mother is a diabetic, I should have been tested for blood sugar……She used to check the pressure, yes, but she never told me anything. And my weight had increased to 97 kgs. Before conception my weight was 66 kgs and even though it increased to 97 kgs after conception, it wasn't shocking to those here. But, when I went to Apollo the doctor was totally shocked ..that why did such a weight gain and diabetes mellitus happen…even he didn't want me getting my delivery done here."

However, it is to be noted that this is the only finding that did not match with the survey results. The survey could not pick up the maternal care experience in the islands, since there were no patients who were either doctor referred or self referred to the mainland for delivery. Even in the informants, one lady who had already had a bad experience with a previous delivery and was also not being given proper care in her second pregnancy, did not choose to

exert her own will and self refer to the mainland. She ended up with still birth of her twin babies. More appalling is the explanation of the deaths given to her by her doctor and also the fact that the family did not question the bad care that the lady received during her pregnancy, even after they lost the babies. *"I asked him what the report was. He asked me 'Do you have the courage to hear it?' I told that I do… he then told me that both the babies had died. I told it's alright. No problem. Whatever God wishes will happen. He then told that both the babies had grown too much, because after six months I wasn't eating properly. …upto nine months, I used to vomit out everything. So, he said that the uterus became so spacious that the babies grew too big. Whatever little I ate went to the babies and they grew big. Since they got space, they grew big."*

The same lady, however, did opt for a self referral to Chennai for a cataract operation, a surgery that can be done in the GB Pant Hospital and two other private hospitals- one being a branch of a popular eye hospital in the mainland.

That the islanders, who have a high level of awareness regarding their options and seek better care whenever they can, do not refer themselves to the mainland for childbirth for similar reasons, only shows the importance given to childbirth and maternal health in the islands. A possible gendered dimension needs to be explored here.

Chapter 4

Discussion and Conclusion

4.1 Findings and literature

This study set out to find the pattern of referral utilization to mainland India from South Andaman Islands, the factors associated with such referrals, their causes and consequences. There were a total of 22.7% households that had had at least one referral in the past one year. Of the individuals who had utilized any form of health service in the past one year, there were a total of 14.2% individuals who had referrals to mainland India and **84% of these were self-referrals**.

The study showed a **typical pattern in the referrals** based on which it can be surmised that the odds of South Andaman islanders seeking treatment in mainland India is higher among the middle aged and elderly compared to the younger and adolescent groups; higher for the people whose families have been in the islands since before 1942 (Pre-42 category) as compared to other categories. The odds were also found to be higher for individuals belonging to households with a higher average monthly expenditure and with at least one member who had attained education beyond schooling. Most of these referrals were for super speciality related complaints.

Some other predictors that were found to have statistically significant associations with seeking referral care in the mainland were marital status, religion but their practical significance seemed to be low.

The higher odds for the elderly age group could be because some of the most common ailments for which referrals were sought, were for conditions related to the ageing process (higher prevalence of non-communicable diseases, higher chance of carcinomas, renal failures, cataract etc).

The higher odds for completing referrals for the households with higher education could be due to better empowerment to deal with new situations and also a higher awareness of what can be expected from the different health care systems. It should also be noted that a dearth of higher educational institutions in the islands lead many islanders to the mainland for higher education and so, some proportion of the higher educated group might have some member in the family who has lived in the mainland and such prior acquaintance with the area and people can in some way help the referral process.

The link between higher odds of completed referrals and the Pre-42 residential category can be only partly explained by their household education status. While the Pre-42s do have a higher proportion of participants from households that had at least one member with education more than just schooling (64%) as compared to others (57.1%), the difference is not statistically significant (F test p value 0.061). The proportion of Pre-42s with a higher average monthly expenditure is also lesser (23.2%) than the proportion in all other categories (25.2%). Possible explanations to the phenomenon of higher referrals among the Pre-42s are that since these families have been residing in the islands from a longer time than families belonging to other categories, their relation with the health system in the islands is also older than others'. The chance of bad experiences in the island health system because of the obvious lack of facilities in the past is also higher among the Pre-42s, which could be continuing to shape their present perception of the health system. This dissatisfaction with

the health services in the islands and the feeling of ‘mainland is always better’ could lead to a preference of treatment in the mainland. A similar feeling may not be present among members of some other categories like the 10Years who are more exposed to the mainland health system and hence more aware of the nuances there. To them, shorter queues, availability of most of the prescribed medicines in the G.B. Pant hospital itself, shorter distance and lesser time taken to reach the hospital/health centres when compared to the mainland might contribute to a relative appreciation of the primary care in the islands that tends to reflect in their choice of treatment for tertiary care as well. Yet another reason could be that the Pre-42s tend to have more severe health complaints. However, this is unlikely since the Pre-42s are not a homogenous group in terms of their nativity and a similar biological make up among all Pre-42s is implausible. A further exploration is needed to confirm and find possible reasons for such a trend in this group.

Most of the participants who sought referral care did not possess a BPL card and were not eligible for reimbursements by the Government; they mostly used up their savings to meet their health care needs in the mainland. The most common ‘savings’ cited here was the ‘GPF’(General Provident Fund) available to the regular government employees. Most of the referred cases had had a contact with the private sector in the islands. The mean direct expenditure was found to be higher for the doctor related cases when compared to those who self referred themselves. And that for most of the individuals who completed referral care, some or the other factor facilitating referral completion were present. This included being given a referral slip or complete information of the referral institute by the doctor, being eligible for reimbursements or having friends and families in the mainland.

The study finds the most important **cause behind the referrals** to be dissatisfaction with the treatment and care being provided by the health system in the islands- both in the public as well as the private sector. While the physicians mostly refer cases to the mainland when there is a lack of treatment/ diagnostic facilities in the islands, a huge proportion of the self referrals take place not because the facilities were not available but because people want 'better services'. Such referrals and the ensuing financial and social burden can be avoided by improving the existing services in the islands. The qualitative component of the study also shows the same findings.

The **consequences of these referrals** were mostly favourable to the patients and their families. Majority of the people in both the self referred and the physician referred groups were totally satisfied with their referral experience and many did not find anything difficult about the referral process. It gives us an idea of the extent of normalization of mainland referrals that has taken place among the islanders. It could also mean that ways of resource mobilization, in terms of finance, contacts and information, have all developed over time to cope with the poor tertiary health care services in the islands and enable people to switch between health systems. While this is true for all places, it is of particular importance in remote and island populations since here, the alternative health system is so geographically distanced from the patient that the financial and social cost incurred in availing the treatment increases manifolds.

Findings similar to the present study were noted in other studies as well. A door to door survey was conducted between 2008-2011 at KwaZulu-Natal, South Africa, with an aim to find the pattern of referral for non acute child health conditions, the rate of compliance and the factors associated with compliance to referral advice. The study showed that compliance

with referral was higher in households that had any member with secondary school education (77%) than those that had lower levels of education (40%). Referral compliance also increased with increasing wealth status of the household with the richest 20% households showing a compliance rate of 57%[62].

The present study also found findings similar to Al Fadil et al's 2000 study looking into the factors associated with referral compliance in children - a perception of better quality of healthcare in the referral facility can lead to self referrals[16]. This, along with a lack of trust in the lower levels of health care, as also mentioned in the 1987 WHO Expert Committee Report on the Role of Hospitals at the First Referral Level, were both outcomes of poor service in the island health systems and led to people self referring themselves to the mainland[3]. Ability to change their endowments into entitlements, as seen in Ergler et.al.'s qualitative study in Chennai, was another reason for self referrals[39]. Certain conditions that did not get too much attention from the local doctors could still find treatment in the mainland, owing to self referrals, this is very similar to Brown et. al.'s 2010 study findings[40].

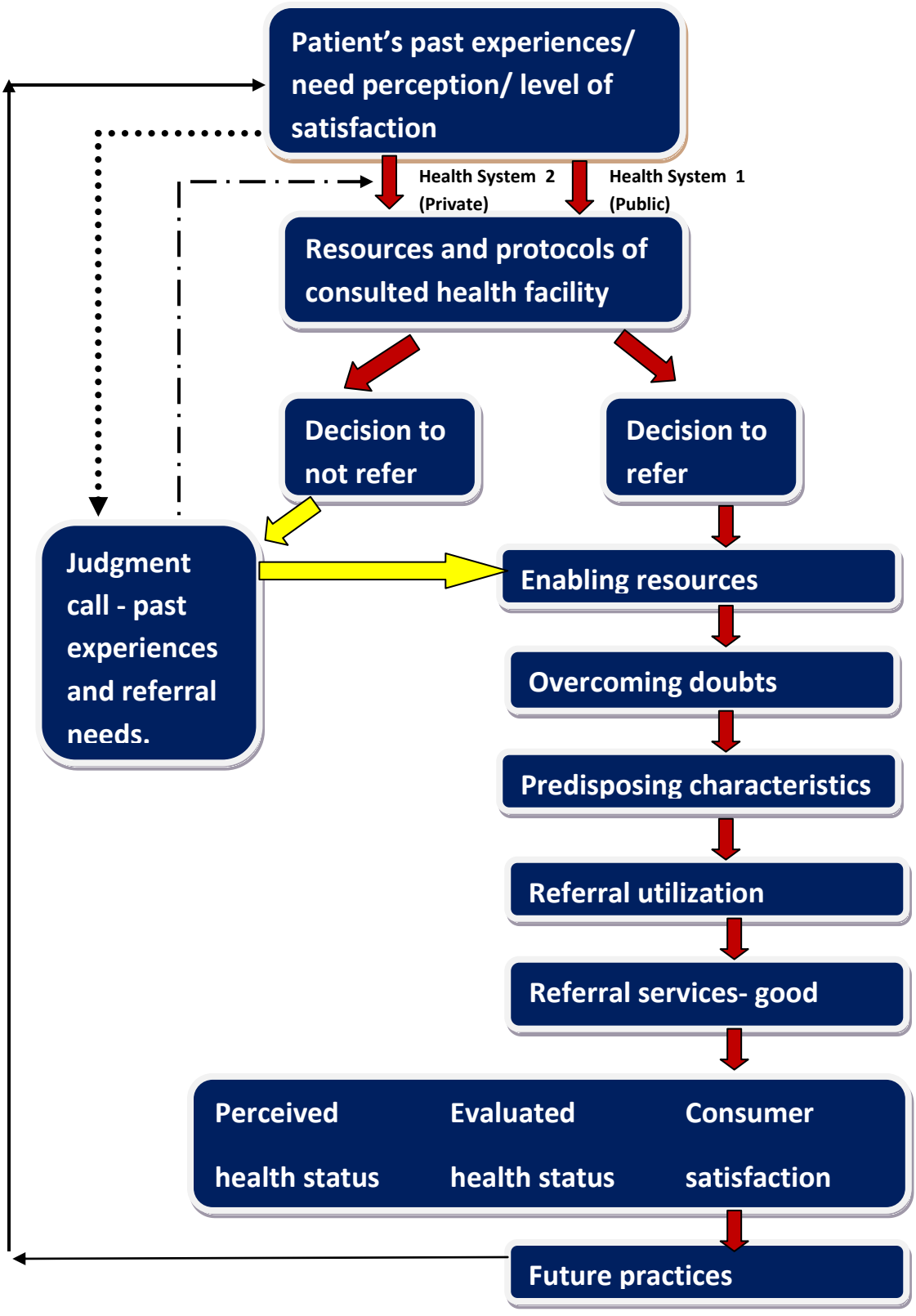
Another study conducted by Alter et.al. in Canada aimed to find if the impact of socioeconomic status on angiography use with varying levels of health services supply. The study used secondary data from the Ontario Myocardial Infarction Database and Canadian census data to find the neighbourhood income levels of 47,036 acute myocardial infarction patients. It found that irrespective of the hospital, the use of angiography services increased with increasing levels of neighbourhood income of the patients. This impact of the socioeconomic status on angiography use (a tertiary health facility use) persisted whether or not the given hospitals from which the patients were selected had facilities for angiography. This means that these patients belonging to higher socioeconomic groups accessed

angiography care from other hospitals, if the supply in their own hospitals was low. This finding is against the opinion that a reduction in supply of a service will also reduce its utilization. On the contrary, people tend to find ways to circumvent the short supply and continue to meet their demands[63].

4.2 Emerging conceptual framework

The pattern which emerges from this study is similar to the conceptual framework that had been proposed earlier, but with some major differences such as giving a higher importance to the patients' judgment and experiences, which has come out as the most important factor in driving the entire referral process. The emerging conceptual framework strengthens the notion that "patient activation", defined as "having the motivation, knowledge, skills and confidence to make effective decisions to manage health", plays a big role in the health care utilization patterns as well as the resultant health outcomes of patients. [64] The most decisive factor is the patient's own experience and perceived need of care which helps her/him decide whether (s)he would make a judgment call and bypass the health systems in the islands or choose one of the two existing health systems- the public and private sectors. From the islands, the patient can either get a referral from the doctor or can again make a judgment call based on his past experiences and perceived need of higher levels of care and choose to leave the island health system.

Fig. 4.1 Conceptual framework for health referral utilization emerging from the study.



Before finally completing the referral, all patients have to mobilize enabling resources such as finance, information and support for handing over responsibilities; then they have to overcome any doubts that they may have regarding the appropriateness of their decision to refer. Other factors such as having friends and relatives in the mainland finally come into play and help the patient in completing her/his referral. The referral experience, which is mostly favourable, then adds on their past experience and helps shape future health care utilization decisions. Any hurdle in the pathway can make the patient fall back into the system. It is important to note that the components of a referral system as listed out by the WHO[8], completely ignore the role played by the patients, their perceptions and experiences in the success or failure of any referral system. Patients' past experiences with the health system and referral care become all the more important for areas such as island populations which are so largely dependent on referral care.

4.3 Strengths and limitations of the study

This study used a mixed methods approach and so, offered a more complete picture of the referral scenario in the South Andaman Islands than what could have been got from a single design. This study is also important because it looks beyond the hospital initiated referrals that most referral studies focus on, and finds the actual referral level in the community by including the self referral cases. It provides a conceptual framework that can aid further research on remote and island populations.

Methodologically, the study adopted a PPS sampling to ensure the correct rural urban mix of the sample and randomization was done to minimize bias. Non responder analysis was also done to ensure that they were not systematically different from the respondents. In the analysis, co-linearity, effect modification and confounding were looked for and adjusted;

triangulation with qualitative data was achieved. The entire study was conducted by a single investigator to avoid inter-observer bias. The response rate was high (98%). Design effect calculated from the present study for the outcome variable 'any completed referral' was 1.2. Socio-demographic features of the households in South Andaman were expected to show similarity within clusters, but, the low design effect indicates that the 'referral probability' does not show much similarity within clusters. The study itself had assumed an arbitrary design effect of two for sample size estimation indicating that the study sample was larger than what was essential to ensure variability. This can further reduce the random error in the findings.

One main limitation of the study is that though the overall sample size was adequate (350 households), the number of individuals with health service utilization averaged at only two per household. So, at a 14.2% initiated referral rate, the number of referrals was only 106. A higher number of health care utilization per household would have given more referral cases enabling better analysis.

The study looked at the largest and most urban island in the Andaman and Nicobar group, but did not study other islands which have smaller populations, are more distant from the GB Pant Hospital and the airport, can have different information sources and health need perceptions. This limits the findings to the South Andaman Islands (the district) alone.

4.4 Conclusion

This study gives the pattern of referral utilization to mainland India from the South Andaman Islands and also points at the factors associated with such referrals. A special focus has been given to self referrals and to finding the causes and consequences of health referrals to

mainland India. The study shows that patient perception of health needs and past experiences aided by "patient activation" play the decisive role in referral utilization. A patient that has the resources to control the consequences of a referral utilization by buffering the negative consequences such as financial crisis, would do so and complete the referral, to improve the quality of his/her care.

While a lack of tertiary level health care in island populations leads to "island penalty", poor services in primary level health care, bad behavior of the doctors and negligence lead to people being dissatisfied and seeking referral care even for the services available in the island health system, mounting to a "compounded island penalty". And though a "culture of referral"[65] has been created in the islands where people have accepted mainland referrals as a legitimate option, if this continues the overall cost to the state and the centre would run high.

4.5 Recommendations

Most of the recommendations are drawn from the islanders who participated in the interviews.

1. Strengthening the public sector health system in the islands:
    a. In-service trainings to the medical staff and doctors on knowledge, skill-building and behavioural changes towards patients.
    b. Ensuring better behaviour of doctors, nurses and other medical staff.
    c. Bringing in super-specialists on deputation to the islands.
    d. Increasing pay ward capacity and facilities.
    e. Improving telemedicine services at GB Pant Hospital.
    f. Advocating the need to stop nepotism in providing medical care and referrals.

2. Improving referral care

a. Reduction in the air fare to mainland, at least for referral patients.

b. Increasing the amount of the LG/MP Fund to cover full expenses of the poor patients.

c. Making the issue of BPL cards to the needy islanders easier.

d. Reimbursements to government employees should be at better and correct rates.

e. Making Andaman Guest House, in Chennai and other cities available to the people.

3. Other recommendations

    a. Setting up information centres at GB Pant Hospital that can provide information on expected treatment and contact persons in the mainland hospitals. Such a service exists at the Apollo Hospitals, Chennai where a doctor is in-charge of stream lining all patients from the islands. Such a service can be started in the public sector in the islands to provide correct information without difficulty.

    b. Increasing awareness in the community about the services available at GB Pant Hospital, the time and place at which specific services will be available to avoid confusions.

    c. Recruiting doctors with better skills in the upcoming medical college.

4.6 Further research

Further research is needed to find the perception of reproductive health care needs among the islanders and the reason that maternal health care does not follow the same referral pattern as other health conditions.

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Annexure I

Sheet number:										
Cluster ID:										
Checklist										
Number of visited house	Is there any member in your household who utilized any medical/surgical health facility in the past twelve months? [Y/N]	If yes, how many?	Is there any member in your household who had a confirmation / termination of pregnancy in the past twelve months? [Y/N]	If yes, how many ?	HHID	UID	Name of eligible members	Consent given for direct interview	Consent not given	Remarks (including contact date/time/ contact number/data not available-999)

Annexure II

"Pattern of utilization of health referrals to mainland India from South Andaman Islands- their causes and consequences"

Identification				
1	Cluster ID			
2	Location	01	Rural	
		02	Urban	
3	Household ID			
4	Date of first contact			
Respondent and Household information				
5	Name			
6	Age			
7	Sex	01	Male	
		02	Female	
8	Religion	01	Hindu	
		02	Muslim	
		03	Christian	
		04	Others (specify)	
		02	English	
9	Relation to head of the household	01	Self	
		02	Son/Daughter	
		03	Son-in-law/Daughter-in-law	
		04	Husband/wife	
		05	Others(specify)	
10	Average monthly expenditure of the household	01	Below ₹5000	
		02	₹ 5000-14999	
		03	₹ 15000- 24999	
		04	₹ 25000 and above	
		05	Don't know	
11	Highest education level attained by any household member	01	Primary	
		02	High school	
		03	Higher secondary	
		04	Diploma/Graduate	
		05	Post graduate	
		06	No formal education	

Eligible member (Proxy for all unavailable members)				
12	Unique ID			
13	Age			
14	Sex	01	Male	
		02	Female	
15	Marital status	01	Married	
		02	Single	
		03	Others (specify)	
16	Religion	01	Hindu	
		02	Muslim	
		03	Christian	
		04	Others (specify)	
17	Category	01	ST	
		02	Pre-42	
		03	Settlers	
		04	10 Years	
		05	Central Govt employees	
		06	Other non islanders	
		07	Don't know	
18	Relation of the patient to the head of the household	01	Self	
		02	Son/Daughter	
		03	Son/Daughter- in-law	
		04	Grandchild	
		05	Husband/wife	
		06	Others(specify)	
19	Employment	01	Regular Govt. employee	
		02	Other Govt. employee	
		03	Private sector employee	
		04	Self employed	
		05	Homemaker	
		06	Unemployed	
		07	Retired	
		08	Student	
		09	Others (specify)	

20	Which of the given treatment modalities were utilized by the patient in the past one year? (Select all relevant answer)	01	OPD/admission at any Govt. health centre.	
		02	OPD/admission at GBPH	
		03	OPD/admission at any private hospital	
		04	Telemedicine -GBPH	
		05	Telemedicine-private clinics	
		06	Super specialist visits at GBPH	
		07	Super specialist visits at private clinics	
		08	Ayurveda/ homeopathy/unani	
		09	Traditional healers	
		10	Others (specify)	
		11	No treatment /self care	
A.				
21	During the past one year, was the patient given a written or oral advice of referral to the mainland by any doctor in the islands?	01	Yes	
		02	No	
If yes, go to 22 (if more than one referral advice, choose the one closest to the data collection period) If no, go to 23				
22	Did the patient follow the advice of the doctor and seek healthcare in the mainland?	01	Yes	
		02	No	
23	During the past one year did the patient ever seek health care in the mainland out of his/her own will or his/her family's/friends' advice, without being advised by the doctor to do so?	01	Yes	
		02	No	
24	*If no to 21 and 23, go to 25*	01	No form of referral	
	If no to 21 and yes to 23, go to C	02	Only self referral	
	If no to 22 and 23, go to B	03	Non compliance	
	If no to 22 and yes to 23, go to B(secondary) and C	04	Primarily self referral	
	If yes to 22 and no to 23, go to B	05	Compliance	
	If yes to 22 and 23, choose the one closest to data collection, go to B if physician initiated (code 05) ; go to C if self referred (code 02)			
25	During treatment in Andamans was there ever a worsening of symptoms/complication?	01	Yes	
		02	No	
26	If yes, could it be due to not being referred to the mainland by the treating doctor or self?	01	Yes	
		02	No	
		03	Not applicable	
27	Did any of the treatment in Andamans end in death?	01	Yes	
		02	No	
28	If yes, could it be due to not being referred to the mainland by the treating doctor or self?	01	Yes	
		02	No	
		03	Not applicable	
Thank the respondent; ask permission to contact if needed.				

B. Patient given doctor's referral advice (Proxy for dead and non-adult members)				
29	Information (filled in by the investigator)	01	Primary	
		02	Secondary(self referral)	
30	Patient available for interview (filled in by the investigator)	01	First contact	
		02	Second contact	
31	Criterion validity: any document as evidence for referral.	01	Yes	
		02	No	
		03	Not applicable (non-compliance)	
32	What was the reason given for the referral?	01	Diagnostic facilities not available	
		02	Treatment facilities not available	
		03	Health Personnel not available	
		04	Others (specify)	
33	Was the referral made by a doctor in the public sector or private sector	01	Public sector	
		02	Private sector	
34	Was a referral slip given by the local doctor?	01	Yes	
		02	No	
35	To which department of the referral facility was the referral made to?	01	Orthopaedics	
		02	Oncology	
		03	Cardiology	
		04	Nephrology	
		05	Urology	
		06	Paediatric surgery	
		07	Gastroenterology	
		08	Neurology	
		09	Neurosurgery	
		10	Obs & Gynaec	
		11	Delivery care (specify)	
		12	Others (specify)	
36	Were you a dependent of a regular Govt. employee at the time of health care utilization?	01	Yes	
		02	No	
		99	Don't know	
37	Did you possess a BPL / Rashtriya Arogya Nidhi card during the period of health care utilization?	01	Yes	
		02	No	
		99	Don't know	
38	Did you have any health insurance during the period of health care utilization?	01	Yes	
		02	No	
		99	Don't know	
39	Did the doctor in Andamans inform you about the expected treatment/diagnostics at the hospital in mainland?	01	Yes	
		02	No	

40	Was information on the mainland hospital/ the doctor to be contacted given by your local doctor?	01	Yes	
		02	No	
If yes, go to 41. If no, go to 44 *Skip 41-58 for those who didn't comply with referral advice, go to 59*				
41	In the mainland, did you consult the samehospital/personnel as had been advised by the local doctor?	01	Yes	
		02	No	
42	Did you consult any hospital or doctor other than/ in addition to the one you were initially referred to?	01	Yes	
		02	No	
If yes, go to 43 If no, go to 44				
43	What was the reason for choosing a hospital that was not advised by your doctor in Andamans? (select all applicable)	01	Not satisfied with the hospital advised for referral.	
		02	The hospital advised for referral was more expensive.	
		03	Know someone at this hospital	
		04	Previous history of treatment at this hospital	
		05	Recommended by some family/friends	
		06	It's reputed.	
		07	Others(specify)	
44	Was the treatment process completed in one visit to the mainland?	01	Yes	
		02	No	
If yes, go to 46. If no, go to 45.				
45	How many visits were made to the mainland for the treatment?	01	1	
		02	2 -3	
		03	>3	
46	How many days on average did you stay per visit?	01	<=7 days	
		02	8-14 days	
		03	15-30 days	
		04	>30 days	
47	What was the approximate cost of treatment (paid to the hospital) of all visits added?			
48	What was the approximate cost of travel, lodging, food (not the hospital payment) of the patient and accompanying bystander, for all visits added?			
49	Was the treatment cost reimbursed to the patient?	01	Yes, the whole amount	
		02	Yes, much amount	
		03	Yes, some amount	
		04	No	

50	How were the remaining expenses arranged for?	01	Savings	
		02	Bank loan	
		03	Friend loan	
		04	Mortgage	
		05	Selling assets	
		06	Others (specify)	
51	Was the Lieutenant Governor (LG) fund/ MP fund utilized for the treatment? (select all appropriate)	01	Yes, the LG fund	
		02	Yes, the MP fund	
		03	No	
52	Have you previously sought treatment in the mainland?	01	Yes	
		02	No	
53	Do you have relatives/friends in the mainland who could help with the treatment process in mainland?	01	Yes	
		02	No	
54	Was there any other help that could be availed during the mainland stay?	01	Yes (please specify)	
		02	No	
55	Are you satisfied with the referral treatment?	01	Totally satisfied	
		02	Somewhat satisfied	
		03	Not satisfied	
56	From where is continued care being sought	01	Mainland facility	
		02	Island facility (any)	
		03	Both mainland and island facilities	
		04	No continued care required.	
		05	Did not continue care.	
57	In the completion of this referral advice, what aspect did you find most difficult?			
58	In the completion of this referral advice, what aspect did you find most helpful?			
Thank the respondent; ask permission to contact if needed.				

For patient who didn't comply with doctor's referral advice

59	What was the reason for non-completion of the referral?	01	Didn't feel the need to	
		02	Financial constraints	
		03	Available in other local clnics.	
		04	Others (specify)	
		05	Not applicable (complied)	
60	Are you satisfied with the treatment available locally?	01	Totally satisfied	
		02	Somewhat satisfied	
		03	Not satisfied	
		04	Not applicable	
Thank the respondent; ask permission to contact if needed.				

C. Patient who self referred to mainland (Proxy for dead and non-adult members)				
61	Patient available for interview	01	First contact	
		02	Second contact	
62	Criterion validity: any document as evidence for referral.	01	Yes	
		02	No	
63	What was the reason for the self-referral?	01	Diagnostic/treatment facilities not available	
		02	Health Personnel not available	
		03	Dissatisfied with service	
		04	Long waiting time	
		05	Others (specify)	
64	To which department of the referral facility was the self-referral made to?	01	Master check up/ package care	
		02	Orthopaedics	
		03	Oncology	
		04	Cardiology	
		05	Nephrology	
		06	Urology	
		07	Paediatric surgery	
		08	Gastroenterology	
		09	Neurology	
		10	Neurosurgery	
		11	Obs & Gynaec	
		12	Delivery care (specify)	
		13	Others (specify)	
65	Were you a dependent of a regular Govt. employee at the time of health care utilization?	01	Yes	
		02	No	
		99	Don't know	
66	Did you possess a BPL / Rashtriya Arogya Nidhi card during the period of health care utilization?	01	Yes	
		02	No	
		99	Don't know	
67	Did you have any health insurance during the period of health care utilization?	01	Yes	
		02	No	
		99	Don't know	
68	Had you enquired if this treatment is available in the islands?	01	Yes	
		02	No	
69	Is this treatment available in the islands?	01	Yes	
		02	No	
		99	Don't know	

70	What was the reason for choosing this referral hospital? (select all appropriate)	01	Know someone at this health facility	
		02	Previous history of treatment at this facility	
		03	Recommended by some family/friends	
		04	It's reputed	
		05	Others(specify)	
71	Was the treatment process completed in one visit to the mainland?	01	Yes	
		02	No	
If yes, go to 73. If no, go to 72				
72	How many visits were made to the mainland for the treatment?	01	1	
		02	2 -3	
		03	>3	
73	What was the average duration of stay per visit?	01	<=7 days	
		02	8-14 days	
		03	15-30 days	
		04	>30 days	
74	What was the approximate cost of treatment (paid to the hospital) of all visits added?			
75	What was the approximate cost of travel, lodging, food (not the hospital payment) of the patient and accompanying bystander, for all visits added?			
76	Was the treatment cost reimbursed to the patient?	01	Yes, the whole amount	
		02	Yes, much amount	
		03	Yes, some amount	
		04	No	
77	How were the remaining expenses met?	01	Savings	
		02	Bank loan	
		03	Friend loan	
		04	Mortgage	
		05	Selling assets	
		06	Others (specify)	
78	Was the Lieutenant Governor (LG) fund/ MP fund utilized for the treatment? (select all appropriate)	01	Yes, the LG fund	
		02	Yes, the MP fund	
		03	No	
79	Do you have a previous history of treatment in the mainland?	01	Yes	
		02	No	
80	Do you have relatives/friends in the mainland who could help with the treatment process in mainland?	01	Yes	
		02	No	
81	Was there any other help that could be availed during the mainland stay?	01	Yes (please specify)	
		02	No	
82	Was the visit to the mainland during which treatment was sought actually for some other work (non health related)?	01	Yes	
		02	No	

83	Are you satisfied with the treatment in mainland?	01	Totally satisfied	
		02	Somewhat satisfied	
		03	Not satisfied	
84	From where is continued care being sought	01	Mainland facility	
		02	Island facility (any)	
		03	Both mainland and island facilities	
		04	No continued care required.	
		05	Didn't continue care	
85	In completing this treatment what aspect did you find most difficult?			
86	In completing this treatment, what aspect did you find most helpful?			

Thank the respondent; ask permission to contact again, if required.

Identification				
1	Cluster ID			
2	Location	01	Rural	
		02	Urban	
3	Household ID			
4	Date of first contact			
Non responders				
Skip questions 5 to 86 for non responders				
87	Unique ID-Applicable only for individual non response			
88	Age	01	18-34 yrs	
		02	35-49 yrs	
		03	50-64 yrs	
		04	>=65 yrs	
89	Sex	01	Male	
		02	Female	
90	Religion	01	Hindu	
		02	Muslim	
		03	Christian	
		04	Others (specify)	
91	Highest education level attained by any household member	01	Primary	
		02	High school	
		03	Higher secondary	
		04	Diploma/Graduate	
		05	Post graduate	
		06	No formal education	
92	Category	01	ST	
		02	Pre-42	
		03	Settlers	
		04	10 Years	
		05	Central Govt employees	
		06	Other non islanders	
		07	Don’t know	
93	Reasons for not participating in the study	01	Time constraints	
		02	Not interested in research	
		03	Others (specify)	

Annexure III

Guidelines for in-depth interview

UID (from survey): Interview ID:

Date: Time:

For those who complied with the doctor's advice:

1. Please describe your illness/pregnancy episode and your contact with the health care facility in the islands.
2. What were the reasons for your referral given by the physician?
3. What are your views on the physicians' decision of referral to the mainland facility?
4. Please describe all the information given to you/your family members by the physician regarding your referral- the institute to which you were being referred, expected treatment at the referral facility, whom to contact, possible expense, and other obstacles that you might face.
5. What more information and help do you think the island physician should have given you?
6. Please describe the preparation you and your family/friends had to make in order to complete the referral- financially, handing over family responsibilities to others and any other adjustments made.
7. Please describe your referral experience in the mainland in terms of the treatment and care given to you, how hard or easy it was.
8. What difficulties did you face in seeking care at the referral facility?
9. What was the outcome of the referral completion on your health?
10. Are you happy with your decision to comply with the doctor's advice?
11. What suggestions do you have to improve the referral process for the islanders?

For those who didn't comply with the doctor's advice:

1. Please describe your illness/pregnancy episode and your contact with the health care facility in the islands.
2. What were the reasons given for your referral by the physician?
3. What are your views on the physicians' decision of referral the mainland facility?
4. Please describe all the information given to you/your family members by the physician regarding your referral- the institute to which you were being referred, expected treatment at the referral facility, whom to contact, possible expense, and other obstacles that you might face.
5. What more information and help do you think the island physician should have given you?
6. Please describe the preparation you and your family/friends would have had to make in order to complete the referral- financially, handing over family responsibilities to others and any other adjustments made.
7. What were the reasons that made you decide against completing the referral?
8. What was the outcome of the referral non-completion on your health?
9. Are you happy with your decision to not comply with the doctor's advice?

10. What suggestions do you have to improve the referral process for the islanders?

For those who self referred:

1. Please describe your illness/pregnancy episode and your contact or non-contact with the health care facility in the islands.
2. If you had a contact with the health care facility in the islands, what were the reasons given by the physician for your referral/non-referral?
3. What are your views on the physicians' decision of referral/non-referral to the mainland facility?
4. Please explain the reasons why you chose to take treatment in the mainland.
5. Please explain the ways in which you collected/received information to choose the place of treatment, health facility or doctor.
6. What more information do you think you should have acquired before self referring to the mainland?
7. Please describe the preparation you and your family/friends had to make in order to complete the referral- financially, handing over family responsibilities to others and any other adjustments made.
8. Please describe your referral experience in the mainland in terms of the treatment and care given to you, how hard or easy it was.
9. What difficulties did you face in seeking care at the referral facility?
10. What was the outcome of the self referral on your health?
11. Are you happy with your decision to self refer?
12. What suggestions do you have to improve the referral process for the islanders?

Annexure IV

Information Form-Survey

Namashkar. I, ***, am a student of 'Master of Public Health' at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology. As part of my dissertation, I am conducting a study on "Pattern of utilization of health referrals to mainland India from South Andaman Islands- their causes and consequences".

Reason for research:

Given that such health referrals are inadvertent in certain conditions, the islanders are forced to seek treatment in mainland India, whether or not they are eligible for reimbursements. Such financial barriers tend to worsen health conditions and lower the referral rates. In A&N Islands, however, referrals to mainland are the preferred means of treatment by most, even at times when reasonably good options are available in the islands. Such practices lead to a huge out of pocket expenditure on the islanders that can have drastic consequences including a worsening of health. The present study is trying to find out:

- To find the pattern of utilization of health referrals to mainland India from South Andaman islands.
- To find the factors associated with the utilization of health referrals to mainland India from South Andaman Islands.
- To find the proportion of self referrals among all referrals.
- To find the factors associated with self referrals.
- To find the causes and consequences of such health referrals

If you agree to participate in the study, you will be asked a few questions on your household, social and economic characteristics, regarding your disease/pregnancy and your referral. Your participation in the study won't have any direct benefits to you right now, but it will help to identify the difficulties faced by people in completing referrals and can be proposed to the administration to improve health services in the islands. Your participation in the study is completely voluntary and non-participation will not harm you in any way. The information given by you will be kept safely with me and won't be shared with anyone who is not a part of the research. If you have any doubts regarding the research you can contact me at *** or *** , IEC Member-Secretary, at the number ***.

Thank you

***

Consent form-Survey

I, _____, resident of
_____, aged _____ years, declare that

1. I have read about this study in the information form and I have clarified all the doubts that I had. [ ]
2. I also understand that my participation in the study is voluntary and that I can, at any time, discontinue my participation in the study. [ ]
3. I understand that my identity won't be revealed in any published or released information from this study. [ ]
4. I am voluntarily agreeing to be a part of this study. [ ]

Signature/ Thumb imprint

Name:

Witness name:

Relation to participant:

Date and Time:

UID:

HHID:

Cluster ID:

Annexure V

Information Form- in-depth interview

Namashkar. I, ***, am a student of 'Master of Public Health' at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology. As part of my dissertation, I am conducting a study on "Pattern of utilization of health referrals to mainland India from South Andaman Islands- their causes and consequences".

Reason for research:

Given that such health referrals are inadvertent in certain conditions, the islanders are forced to seek treatment in mainland India, whether or not they are eligible for reimbursements. Such financial barriers tend to worsen health conditions and lower the referral rates. In A&N Islands, however, referrals to mainland are the preferred means of treatment by most, even at times when reasonably good options are available in the islands. Such practices lead to a huge out of pocket expenditure on the islanders that can have drastic consequences including a worsening of health. The present study is trying to find out:

- To find the pattern of utilization of health referrals to mainland India from South Andaman islands.
- To find the factors associated with the utilization of health referrals to mainland India from South Andaman Islands.
- To find the proportion of self referrals among all referrals.
- To find the factors associated with self referrals.
- To find the causes and consequences of such health referrals

If you agree to participate in the study, you will be asked a few questions on your household, social and economic characteristics, regarding your disease/pregnancy and your referral. Since noting down everything might be difficult and may escape my memory later, you are requested to permit me to audio record the interview. Only the investigator and the guide will have access to the recorded interview Your participation in the study won't have any direct benefits to you right now, but it will help to identify the difficulties faced by people in completing referrals and can be proposed to the administration to improve health services in the islands. Your participation in the study is completely voluntary and non-participation will not harm you in any way. The information given by you will be kept safely with me and won't be shared with anyone who is not a part of the research. If you have any doubts regarding the research you can contact me at *** or ***, IEC Member-Secretary, at the number ***

Thank you

***

Consent form- in depth interview

I, _____, resident of _____, aged _____ years, declare that

5. I have read about this study in the information form and I have clarified all the doubts that I had. [ ]
6. I also understand that my participation in the study is voluntary and that I can, at any time, discontinue my participation in the study. [ ]
7. I understand that my identity won't be revealed in any published or released information from this study. [ ]
8. I permit the investigator to audio record my interview for research purposes and share it with the guide. [ ]
9. I am voluntarily agreeing to be a part of this study. [ ]

Signature/ Thumb imprint

Name:

Witness name:

Relation to participant:

Date and Time:

UID:

HHID:

Cluster ID:

Annexure VI

IEC Clearance Certificate

Annexure VI

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान

तिरुवनन्तपुरम - 695 011, केरल, इंडिया

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY

THIRUVANANTHAPURAM - 695 011, INDIA

(An Institute of National importance under Govt. of India)

Institutional Ethics Committee

(IEC Regn No. ECR/189/Inst/KL/2013)

SCT/IEC/600/JUNE -2014 11-06-2014

Dr. Almas Shamim
MPH Student
AMCHSS, SCTIMST.

Dear Dr. Almas Shamim,

The Institutional Ethics Committee reviewed and discussed your application to conduct the study entitled "PATTERN OF UTILIZATION OF HEALTH REFERRALS TO MAINLAND INDIA FROM SOUTH ANDAMAN ISLANDS- THEIR CAUSES AND CONSEQUENCES" (IEC/600) on 7th June, 2014.

The following documents were reviewed:

1) *Proposal.*
2) *Checklist- English.*
3) *Checklist-Hindi.*
4) *Consent form- survey- English.*
5) *Consent form-survey- Hindi.*
6) *Consent form- in-depth interview- English.*
7) *Consent form-in-depth interview- Hindi.*
8) *Interview schedule- English.*
9) *Interview schedule-Hindi.*
10) *In-depth interview guidelines- English.*
11) *In-depth interview guidelines- Hindi.*

तार : चित्रमेट Grams : Chitramet | फोन Phone : 2443152 | फाक्स Fax : (91)471-2446433 2550728 | ई-मेइल E-mail : sct. @sctimst.ker.nic.in

The following members of the Ethics Committee were present at the meeting held on 7th June, 2014 at G. Parthasarathi Board Room, AMCHSS, SCTIMST.

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Justice Gopinathan. P.S	BSc. LLB	Male	Legal Expert (Chairperson)	*No*
2.	Dr. Meenu Hariharan	DM	Female	Clinician (Gastro Enterologist)	*No*
3.	Dr. M.D. Gupte	MD, DPH	Male	Public Health	No
4.	Dr. R.V.G. Menon	PhD	Male	Lay Person	No
5.	Dr. Mala Ramanathan	MSc, PhD MA	Female	Ethicist/Social Scientist (Member Secretary)	Yes

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team /guide who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,

Mala Ramanathan
Member Secretary, IEC