

To Evaluate the Perceptions of Quality of Care and Driver's of Women's
Decisions About Institutional Delivery at LifeSpring Hospital, Hyderabad

by

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Thesis submitted in partial fulfillment of
the requirements for the degree of Master of Science
in the Duke Global Health Institute
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ABSTRACT

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Abstract

Background: The Millennium Development Goals (MDG) 4 and 5 of the United Nations has set the target of reducing maternal deaths to 109 per 100,000 live births and infant deaths to 27 per 1000 live births level by 2015 respectively. India reported an MMR 212 per 100,000 live births in 2007-2009 and a neonatal mortality rate (NMR) of 32 per 1000 live births in 2010 accounting for more than 20% of maternal deaths and 25% of neonatal deaths globally respectively. Unless issues such as reduction in delay in reaching the appropriate health facility in time and receiving care for obstetric and neonatal complications before, during and after childbirth such as infections and premature birth, are addressed, India is unlikely to achieve the MMR and NMR reduction targets by 2015 as envisaged in the MDGs. To a large extent the accessibility and utilization of reproductive and child health services play an important role in determining the extent of both maternal and neonatal mortality. More than 80% of maternal and neonatal deaths can be prevented through increasing institutional deliveries and by improving the quality of healthcare provided to the women and the newborn babies. Over the past few decades, reduced government spending on public healthcare services and its consequent deterioration has led to a gradual shift in patient volume towards the rapidly expanding private health services in India. Therefore a highly competitive environment makes it necessary for private healthcare services to measure and respond to patient expectations by incorporating their views into quality of health service assessments. Studies like Alden et al. (2004) among working and lower middle income women in urban reproductive health clinics in Vietnam, found that patient perception of quality of services is positively

and significantly associated with both reutilization of services and recommendation of the facility to others. While several studies such as the Rao et. al study (2006) and the Kumari et. al study (2009) in government health facilities in India have identified aspects of patient perception of quality of care that impact patient satisfaction, there has been very little research on aspects of patient perception of quality of reproductive healthcare and its impact on decisions to reutilize services. This study is designed to fill this knowledge gap.

Methods: This study, descriptive and cross-sectional using a survey methodology was administered in five branches of Life Spring Hospitals, a chain of 12 private, for-profit maternity hospitals providing prenatal, perinatal and postnatal care to women in Hyderabad, India. It examined associations between patient perception of various components of the quality of care and predisposition for using the facility for a future delivery. The specific components of quality of care within facilities included cleanliness, availability of modern diagnostic equipment, technical and interactive skills of doctors and clinic staff. The study also tried to compare these associations between patients presenting for prenatal, perinatal and postnatal care.

Results: 72% of survey respondents were between the age group of 18 to 25 years, 97% had some level of formal education, that is, school level (up to 12th grade) or university level (graduate or beyond), 75% had a household income of less than or equal to 10,000 INR per month and 80% of respondents had a previous child, of which, 64% had delivered at LifeSpring Hospitals. The probability of choosing LifeSpring Hospitals for a previous delivery among respondents receiving prenatal care varied significantly by main reason for choice of facility (cost = 66.67%, proximity to home = 50% , facility environment = 15.79%) ($p < 0.05^*$), among

respondents receiving postnatal care by age (18 to 25 yrs = 91.30% , = or > 26 yrs = 64.71%) ($p < 0.05^*$). Among overall respondents indicating a predisposition for LifeSpring Hospitals for a future delivery, the mean score of a composite of overall perception factors (facility cum interactive perception factors) (LifeSpring Hospitals = 3.570 and Others = 3.156) ($p < 0.05^*$), facility perception factors (LifeSpring Hospitals = 3.193 and Others = 2.555) ($p < 0.05^*$) and interaction perception factors (LifeSpring Hospitals = 3.793 and Others = 3.517) ($p < 0.05^*$) was significantly higher compared to those who reported a predisposition for other facilities. Among respondents receiving perinatal care, indicating a predisposition for LifeSpring Hospitals for a future delivery, the mean score of a composite of overall perception factors (facility cum interactive perception factors) (LifeSpring Hospitals = 3.636 and Others = 3.313) ($p < 0.05^*$) and facility perception factors (LifeSpring Hospitals = 3.256 and Others = 2.333) ($p < 0.05^*$) was significantly higher compared to those who reported a predisposition for other facilities. Among respondents receiving postnatal care, indicating a predisposition for LifeSpring Hospitals for a future delivery, the mean score of a composite of overall perception factors (facility cum interactive perception factors) was significantly higher compared to those who reported a predisposition for other facilities (LifeSpring Hospitals = 3.531 and Others = 3.078) ($p < 0.05^*$).

Discussion: Age, income level, education level, parity, perception of charges and reasons such as cost, proximity to home and facility environment (including a specific doctor at the facility, treatment by the staff and the quality of equipment available at the facilities) do not appear to be important drivers of patient's decision to deliver at LifeSpring Hospitals in the future. However, patient perception of LifeSpring's

facilities (including waiting time, crowding and outpatients hours) and interactive skills of staff (including length of consultation time, explanation of tests, staff dynamics, comfort level with advice and patient inclusion in decision making) appear to be important drivers of women's decision to deliver at LifeSpring Hospitals in the future.

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List of Abbreviations

OPD	Out Patient Department
IRB	Institutional Review Board
SIEC	Suraksha Independent Ethics Committee

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1. Introduction

Maternal and infant mortality continue to remain major challenges particularly across the developing world. The Millennium Development Goal (MDG) 5 of the United Nations has set the target of reducing maternal death to 109 per 100,000 live births level by 2015 (SRS 2011, Mukhopadhyay B K 2012 as cited in 31). Almost 287,000 maternal deaths occurred worldwide in 2010 alone. Of these, developing countries accounted for almost 85% (WHO/UNICEF/UNFPA/World Bank, 2012 as cited in 31). In the year 2010, the maternal mortality ratio (MMR) for developing countries was estimated to be 240 maternal deaths per 100,000 live births, with south Asia reporting 220 maternal deaths per 100,000 live births (WHO/UNICEF/UNFPA/The World Bank, 2012 as cited in 31). India had an MMR of 254 per 100,000 live births in 2004-2006 and 212 per 100,000 live births in 2007-2009 (SRS 2011 as cited in 31). Despite this steady decline in maternal deaths, India today accounts for more than 20% of maternal deaths globally (17). Estimates suggest that one out of every 70 girls in India in the reproductive age group will eventually die due to complications arising during pregnancy, childbirth, or unsafe abortion, compared to one in every 7300 in developed countries (UNICEF/WHO as cited in 17). A large percentage of these deaths can be prevented if there is no delay in the decision to seek care for obstetric complications before, during and after childbirth, delay in reaching the appropriate health facility in time, and delay in receiving care at the facility (NRHM-GOI 2010 as cited in 32,17). If these issues are not addressed urgently,

India is unlikely to achieve the MMR reduction targets by 2015 as envisaged in the MDGs (17).

Similarly, the Millennium Development Goal 4 of the United Nations has set the target of reducing infant deaths to 27 per 1000 live births level by 2015 (cited in 17). The WHO estimates that across the world each year, around four million babies die in the first four weeks of life, of whom three million die in the early neonatal period alone (WHO 2006 as cited in 23). More than one fourth of these deaths occur in India (Lawn et al. 2005, Ministry of Health and Family Welfare-GOI 2010 as cited in 44). In the year 2010, India had a neonatal mortality rate (NMR) of 32 per 1000 live births (Ministry of Home Affairs-GOI 2009, UNICEF as cited in 44). This is a steady decline from 69 per 1,000 live births in 1980 to 44 per 1,000 live births in 1991-2000 to 40 per 1000 live births in 2001 to 34 per 1000 live births in 2009 (Ministry of Home Affairs-GOI 2009 as cited in 44). The fact that a majority of neonatal mortality occurs within the first few days of life is indicative of the lack of proper care for complications arising during or immediately after childbirth due to infections, asphyxia during birth, and premature birth (9, and ICMR 2008, Bang et al. 2005 as cited in 44).

The accessibility, availability, and utilization of reproductive and child health services to a large extent play an important role in determining the extent of both maternal and neonatal mortality (Titaley et al. 2011, Darmstadt et al. 2009 as cited in 23). More than 80% of maternal and neonatal deaths can be prevented through increasing institutional deliveries and by improving the quality of care provided to the women and the newborn babies (Ministry of Health and Family Welfare 2002, 2005, WHO 2010,

Hogan et al. 2010, CRR 2008 as cited in 16). The Government of India is a signatory to the Millennium Development Goals of the United Nations and over the past few years has been encouraging institutional deliveries among pregnant women to improve maternal and infant survival as a part of the national health policy (Ministry of Health and Family Welfare 2002 as cited in 16). One scheme introduced by the Government of India in this direction beginning in 2005 is the Janani Suraksha Yojana to encourage institutional deliveries and focus on institutional maternity care at government and accredited private facilities before, during and after child-birth among low income women through cash transfers (16, Ministry of Health and Family Welfare 2006, Lahariya C 2009 as cited in 16).

India's health care system consists of public, not-for-profit, and for-profit entities in the form of hospitals, dispensaries, and clinics (11). The public sector includes government-run hospitals, dispensaries, clinics, and primary health centers. The not-for-profit sector includes charitable institutions, missions, and trusts. The for-profit private sector includes registered medical practitioners, private hospitals and dispensaries or nursing homes (27). The private informal sector consists of practitioners without any formal qualification such as faith healers or “quacks” (11,27). In the past two decades, with central and state government spending on health remaining at less than 1% of GDP (10), India has witnessed a gradual shift in patient volume towards private healthcare from government healthcare services (50,8,39). The vacuum created by the deterioration of public health services has increasingly forced people to shift to the rapidly expanding private health services (GOI 2006, Duggal et al. 2005 as cited in 10). The number of

private hospitals increased from 14% of all hospitals in the 1970's to 68% in 1990's and to 70% of all hospitals and 40% of all hospital beds by 2004 (Baru R 1998, Duggal R as cited in 10). An earlier study in India (Vishwanathan and Rohde 1990 as cited in 11) appears to suggest patient preference for private facilities, when it reported that out of the 65% of diarrhea cases which required medical consultation, more than 80% went to the private facilities and only 10% went to government facilities (11). Another study on health-seeking patterns of young mothers in Karnataka, India (Bhatia and Cleland 2001 as cited in 12) appeared to corroborate this when it reported that 80% of consultations were with private practitioners. Murthy (1999) (as cited in 25) found that in the context of family planning services patients generally perceived private sector health and family planning services to be superior to those offered by the government. Ravindran (1999) (as cited in 25) went further to suggest that the shortage of female doctors in public sector clinics might be drawing female patients to private clinics. In fact, the private sector today accounts for over 82% of outpatient care expenditure and 56% of perinatal care expenditure across the country among all income groups (15). Almost 80% of the total health expenditure of households are now out of pocket (10) and appear to be indicative of more healthcare services being provided by the private sector compared to the public sector. Therefore it is important to study care in this sector in India.

Health care consumers are increasingly focused on receiving good quality health care and hence outcomes centered on the patient are a good way of measuring the effectiveness and efficiency of delivery of health care services (24). It is important to make healthcare services measure, understand and respond to patient expectations

(33,47,14,42). One way to do this is by incorporating the views of the patient into quality of services assessments and then making improvements (33). Quality of care can be defined as the degree of excellence in care and depends on whose perspective is sought—the service provider’s or the patient’s (2). For a long time it has meant the service provider’s perception in terms of technical aspects of care (2). However, lately the focus has turned towards the patient’s assessment of quality of care and his or her satisfaction or dissatisfaction with it (2). The patient’s perception of quality of care means the perception of quality of services received rather than actual health outcomes (Koenig et al. 1999 as cited in 21) and is based on comparisons between what was expected and what was received (37). Studies such as Newman et al. 1998 (as cited in 5), Sandip and Sinha (2010), Iqbal A (2009), and Stock R (1983) as cited in 21 have argued that parameters such as service proximity, costs involved, quality of care in terms of medical outcomes, or patient satisfaction with quality of services received are good parameters to measure patient satisfaction with healthcare services delivery. There is also adequate evidence in the literature to suggest that within the realm of quality of services, factors such as technical competence and interactive skills of providers, physical environment, availability of medicines at the point of service delivery (46,38,40,21,33,7), perceived inequities, a feeling of being treated differently, or even perceptions about not being sufficiently involved in the decision making process are strongly associated with decisions of continuing or not continuing with care at facilities (48). The Iqbal 2009 study further corroborates these findings. The Alden et al. 2004 study among working and lower middle income women in urban reproductive health clinics in Vietnam found

evidence that patient satisfaction with quality of services received at facilities was positively and significantly associated with patient intentions to reutilize services. These results backed other studies such as Cronin & Taylor, 1994; Koenig, Hossain, & Whittaker, 1997 (as cited in 5) which found that satisfaction was associated both with reutilizing services and recommending the facility to others. While several studies such as the Rao et al. study (2006) and the Kumari et al. study (2009) in government health facilities in India have identified aspects of patient perception of quality of care that impact patient satisfaction, there has been very little research in India on aspects of patient perception of quality of reproductive healthcare and its impact on decisions to reutilize services. The few studies that exist have focused on family planning (33,30). The purpose of the present study is to fill this knowledge gap.

1.1 Aims and Objectives

Aim

In the beginning this study was meant to assess how patient perception of quality of care within LifeSpring Hospitals, a private maternity health facility, influenced shifts in health seeking behavior and to track and quantify these shifts from prenatal care to perinatal care to postnatal care.

However, owing to lack of resources, both financial and human, the aim was modified to assess whether patient perception of quality of care within LifeSpring Hospitals is associated with a predisposition for using the facility for a future delivery. A secondary aim of the study is to consider whether the association between patient perception of quality of care within LifeSpring Hospitals and predisposition for using the facility for a future delivery differs between patients presenting for prenatal, perinatal and postnatal care in an attempt to capture a snapshot of the earlier envisaged study.

Objectives

To achieve the aforementioned aims this study will examine associations between patient perception of various components of the quality of care within LifeSpring Hospitals and predisposition for using the facility for a future delivery. The specific components of quality of care within facilities include cleanliness, availability of modern diagnostic equipment, technical and interactive skills of doctors and clinic staff. The study will also try to compare these associations between patients presenting for prenatal, perinatal and postnatal care.

1.2 Materials and Methods

Study site

The study was carried out at LifeSpring Hospitals, a chain of 12 private, for-profit maternity hospitals providing prenatal, perinatal and postnatal care to women in Hyderabad, India. LifeSpring Hospitals state that they provide affordable maternity care to women belonging to low-income families. The hospital started its operations in 2005 and has since expanded across the Hyderabad-Secunderabad region. Each LifeSpring facility has approximately 20-25 beds and operates on a cross subsidy model of tiered pricing (49). Patients have the option of delivering in a general ward, a semi-private room, or a private room. About 70 percent of each hospital is devoted to the general ward. Private rooms are available for close to market rates at hospitals of similar capacity (49). In addition, revenue is generated through family planning services, outpatient consultation fees and rent from outsourced laboratory and pharmacy facilities (49). LifeSpring Hospitals was selected for this study because of its private sector status and willingness to collaborate on this project, and the five branches (Moula Ali, Puranapul, Vanasthalipuram, Bowenpally and Chilkalguda) of this hospital were chosen for data collection for this study on the basis of large patient volumes (Table-1).

Study Design

Given the original aim of assessing how patient perception of quality of care within LifeSpring Hospitals, a private maternity health facility, influenced shifts in health seeking behavior and to track and quantify these shifts from prenatal care to perinatal

care to postnatal care the study was originally envisaged to be a cohort study. A cohort study is meant to follow a group or “cohort” over a period of time (18). This study was meant to enroll and follow a group of pregnant women into the communities surrounding the catchment areas of LifeSpring Hospitals over a period of time from when they registered for prenatal care until the time of delivery and postnatal care. However, owing to time and resource constraints, both financial and human, the study was re-designed to be a descriptive and cross-sectional study to assess whether patient perception of quality of care within LifeSpring Hospitals is associated with a predisposition for using the facility for a future delivery. It enrolled three groups of patient, those presenting themselves for prenatal care, perinatal care and postnatal care at LifeSpring Hospitals at a specific point in time to provide a descriptive snapshot. It involved a survey methodology (Appendix A). The dependent variable was the predisposition of patients for LifeSpring Hospitals as a choice for future delivery. The independent variables included demographic variables such as age range, education levels, income levels, and parity and perception variables such as perception of facilities, perception of interactive skills of staff and perception of charges.

Selection of Sample

The study was conducted among women receiving prenatal or postnatal care at the outpatient department or perinatal care at the inpatient department at LifeSpring Hospitals. As per the original study design patients were to be consecutively screened and enrolled. However, given the resource constraint and time necessary for survey administration the enrollment became a random selection of women providing informed

consent to participate. Of all those who were enrolled, less than 5% left the survey unfinished and were excluded during data analysis.

Data collection

Data collection and data entry occurred over an 8-week period in June-July 2012. Before the data collection began, ethical clearance was obtained from both the Duke IRB (Institutional Review Board) and the SIEC (Suraksha Independent Ethics Committee) in India. A modified survey instrument derived from survey instruments in previous literature and with inputs from LifeSpring Hospitals [16,20,1,17,2,26,14,27-33,38,35,3,48] (Appendix A) was developed and utilized to gather anonymous data. The survey instrument included questions on socio-demographic variables such as income level, age range, education level, parity, and factors related to patient perception. Patient perception refers to how patients felt about services they received at LifeSpring Hospitals. The patient perception factors included assessment of outpatient facilities, responsiveness of staff, and charges- factors that were hypothesized to influence their ultimate decision on where to deliver in the future. The survey also inquired into the patient's previous experience in terms of whether she had a previous delivery at LifeSpring Hospitals, who made that choice and her predisposition to deliver in the future at LifeSpring Hospitals. The survey was created in English, translated into Telugu (local dialect in Andhra Pradesh state) and verified by back translation. Back translation involved translating the already translated document from Telugu back to English to verify consistency.

The survey was administered with the help of a local female professional

research translator. The survey was administered using an interview format. The interviews were conducted at various locations within each facility and many locations lacked adequate privacy. Consultation rooms and medical supplies rooms accessible to hospital staff were used for survey administration at all five locations and lacked screens thereby exposing survey questions and responses to other patients and hospital staff. Since the interview locations were accessible to facility staff, interviews were halted briefly whenever staff entered these locations and then were resumed after they left. Women were approached for recruitment and only those who voluntarily agreed and provided informed consent were enrolled (Appendix B). Patients were informed that their participation was voluntary and that the choice to participate or not would have no effect on any of the services received at LifeSpring Hospitals, at that time or in the future. They were also informed that they were free to withdraw from the study at any point of time, without incurring any penalty, and that there was no compensation to participate in the survey.

The survey questions were read out in Telugu and responses noted in English on hard copies by the female translator. In the event that the patient did not fully comprehend the question, the same response item was explained again in a simpler format. Each survey required on average 40 to 45 minutes to complete. The first week on-site was used to pilot test the survey instrument and to train the translator. The following six weeks were used to administer the survey. Each of the five facilities was visited a total of three times over the data collection period. The local translator was not available during the last week of the 8-week period and this time was utilized to enter

the data gathered from survey sheets into excel sheets and consolidation of data.

Since the study enrolled pregnant women from low-income families and was administered on the hospital premises, there is a possibility that some patients experienced a demand characteristic whereby they may have felt compelled, consciously or unconsciously to participate in the study due to the apprehension of being identified by the hospital authorities and denied care subsequently based on their participation and survey responses. (34). There are several definitions of demand characteristic including awareness of research being conducted or being watched (28). It can also refer to the desire of a research subject to behave as expected as a good subject (34,29). Demand characteristic can also mean that in a research study where the researcher may be a person of authority, subjects may be generally willing to do what is asked of them (19). To compensate for the possible demand effect, the survey did not inquire about names or personally identifiable information including exact age of the patients. Also, care was taken to ensure that hospital staff was not directly involved in any way at the time of administering the surveys to minimize potential concerns in participating. In addition to these steps, patients were directly recruited instead of being referred by the front office staff of the hospital. At one facility, a dedicated social worker attached to the hospital guided patients to the survey administration location. A total of 169 patients from the five sites were recruited that included prenatal, perinatal, and postnatal patients.

Data consolidation and security

Survey responses were recorded by hand on paper. Each paper survey was dated and sequentially numbered for identification. The survey responses were subsequently

entered into Microsoft excel from the hard copies for analysis. The date of survey administration and the identification number was also transferred into excel along with the responses and re-verified by the author. The hard copies of the surveys will be retained until the completion of the study after which they will be destroyed. The data is accessible only to the principal investigator, the data analyst and the author.

Sample Size

The required sample size for the surveys was calculated using the method described in an earlier study (24). The sample size was based on obtaining 80% power at an alpha of 0.05 (or a 95% confidence interval) and was meant to detect an effect size or difference of $> \text{or} = 5\%$ or 0.05 in the outcome variable, that is, the proportion of patients who chose or reported a predisposition to choose LifeSpring Hospitals for a previous or future delivery respectively between those who cited cost as the main reason for choice of facility compared to those who cited proximity. The sample size was to be the same for all other response variables. Ideally a total of 384 women were to be recruited spread across the five branches of Life Spring Hospitals based on the calculation as follows-

1. CI = 95% and $\alpha = 0.05$: therefore $Z_{\alpha/2} = 1.96$
2. Margin of error = $\pm 5\%$ or 0.05.
3. n = required sample size
4. Assuming maximum variability p = prevalence of positive patient perception = 0.5 : therefore q = 1 - p = 0.5

$$n = \frac{z^2 \alpha/2 p q}{}$$

$$\begin{aligned} n &= \frac{\varepsilon^2}{(1.96)^2 \cdot 0.5 \times 0.5} \\ &= \frac{0.05^2}{(1.96)^2 \cdot 0.5 \times 0.5} \\ &= 384 \end{aligned}$$

However the actual sample size attained was 169, which was significantly less than what was required as indicated by the power calculation. With a small sample size the probability of making a Type II error is high due to reduced power. Power is the ability of a statistical test to detect an effect and with a smaller sample size it is less likely to detect a true effect or a true difference. Since this study is underpowered there is a fair chance of a Type II error (18).

Data Analysis

STATA 11.2 statistical software was used for the analysis of data. Data was transferred from excel into STATA (dta.) format and then coded for analysis (Appendix C). Missing data points were identified and coded as “no response” = 3 for education and “no response” = 2 for income (Appendix C).

Summary scales or indices were created from eight questions in the survey that assessed perception of patients about facilities and interaction skills of staff. At the time of analysis, all eight were averaged together into a single score (overall perception factors) and assessed for internal consistency using Cronbach’s alpha (alpha = 0.7143). They were then split into two sub scores by averaging three questions taken together dealing with perceptions about facilities (facility perception factors) (alpha = 0.6766) and

five questions taken together dealing with perceptions about interaction skills of staff (interaction perception factors) ($\alpha = 0.7500$).

Variable distributions were summarized using descriptive statistics (Table- 2). The association between demographic and perception variables and future choice of facility was assessed using chi square tests for categorical variables and one-way ANOVA for continuous variables (Table-3, Table-4). In addition, the aforementioned tests were used to compare between prenatal, perinatal and postnatal patients. A p-value of less than 0.05 was considered to be statistically significant.

1.3 Results

Table 2 shows the demographic profile of the survey respondents. Table 2 also provides further detail by pregnancy status of the respondents (i.e prenatal, perinatal and postnatal). Prenatal patients included pregnant women who were visiting the outpatient department of LifeSpring Hospitals for maternity care. Postnatal patients included women who had recently delivered at LifeSpring Hospitals or another facility and were visiting the outpatient department for maternity and infant care. Perinatal patients included women who were at the hospital to deliver or had recently delivered at the inpatient department of LifeSpring Hospitals. Seventy-two percent of survey respondents were between the age group of 18 to 25 years. Ninety-seven percent of respondents had some level of formal education, that is, school level (up to 12th grade) or university level (graduate or beyond). Seventy-five percent of respondents had a household income of less than 10,000 INR per month. Eighty percent of respondents had a previous child; of these, 64% had delivered at LifeSpring Hospitals.

Table 3 shows the total number and percent of survey respondents who reported they had used LifeSpring Hospitals over other facilities for a previous delivery based on the reasons for that choice and the decision maker for that choice. Table 3 also provides further detail by pregnancy status of the respondents (i.e prenatal and postnatal). Perinatal patients were excluded for analysis since for one group among them the question would have been referring to a child they had delivered earlier while for the other group it would have been referring to the child they had recently delivered at LifeSpring Hospitals and therefore not comparable. Previous delivery refers to the most recent delivery the women

had. Only one result in Table 3 reached statistical significance ($p < 0.05^*$). The probability of choosing LifeSpring Hospitals for a previous delivery among overall respondents did not vary significantly by reason for choice of facility such as cost of delivery, proximity to home or facility environment and the decision maker for that choice. The same was true for patients receiving postnatal care. The probability of choosing LifeSpring Hospitals for a previous delivery among respondents receiving prenatal care varied significantly by only reason for choice of facility (cost = 66.67%, proximity to home = 50%, facility environment = 15.79%) ($p < 0.05^*$).

Table 4 shows the total number and percent of survey respondents reporting a predisposition for LifeSpring Hospitals over other facilities for a future delivery based on demographic factors. Table 4 also provides further detail by pregnancy status of the respondents (i.e prenatal, perinatal and postnatal). Future delivery refers to a hypothetical situation given to the women where they may become pregnant again in the future. Only one result in Table 4 reached statistical significance ($p < 0.05^*$). The probability of choosing LifeSpring Hospitals for a future delivery among overall respondents did not vary significantly by age, education, household income level or parity. The same was true for patients receiving prenatal or perinatal care. The probability of choosing LifeSpring Hospitals for a future delivery among respondents receiving postnatal care varied significantly only by age (18 to 25 yrs = 91.30% , = or > 26 yrs = 64.71%) ($p < 0.05^*$).

Table 5 shows the total number and percent of survey respondents reporting a predisposition for LifeSpring Hospitals over other facilities for a future delivery based on their perception of charges at LifeSpring Hospitals. Table 5 also provides further detail by pregnancy status of the respondents (i.e prenatal, perinatal and postnatal). None of the results in Table 5 reached statistical significance ($p < 0.05^*$). The probability of choosing LifeSpring Hospitals for a future delivery among overall respondents did not vary significantly by perception of charges. The same was true for patients receiving prenatal, perinatal or postnatal care.

Table 6 shows the total number and percent of survey respondents who reported a predisposition for LifeSpring Hospitals over other facilities for a future delivery based on reasons for that choice. Table 6 also provides further detail by pregnancy status of the respondents (i.e prenatal, perinatal and postnatal). None of the results in Table 6 reached statistical significance ($p < 0.05^*$). The probability of choosing LifeSpring Hospitals for a future delivery among overall respondents did not vary significantly by reason for choice of facility such as cost of delivery, proximity to home or facility environment. The same was true for patients receiving prenatal, perinatal or postnatal care.

Table 7 shows the total number and percent of survey respondents who reported a predisposition for LifeSpring Hospitals over other facilities for a future delivery based on their current perceptions of LifeSpring Hospitals facilities and the interactive skills of the staff at these facilities. Table 7 also provides further detail by pregnancy status of the respondents (i.e prenatal, perinatal and postnatal). Among overall respondents indicating a predisposition for LifeSpring Hospitals for a future delivery, the mean score of a

composite of overall perception factors (facility and interactive perception factors) was higher compared to those who reported a predisposition for other facilities (LifeSpring Hospitals = 3.570 and Others = 3.156 on a 1-5 scale) ($p < 0.05^*$). This was also true in case of mean score of a composite of facility perception factors (LifeSpring Hospitals = 3.193 and Others = 2.555) ($p < 0.05^*$) and mean score of a composite of interaction perception factors (LifeSpring Hospitals = 3.793 and Others = 3.517) ($p < 0.05^*$).

Among respondents receiving perinatal care, indicating a predisposition for LifeSpring Hospitals for a future delivery, the mean score of a composite of overall perception factors (facility and interactive perception factors) was higher compared to those who reported a predisposition for other facilities (LifeSpring Hospitals = 3.636 and Others = 3.313) ($p < 0.05^*$). This was also true in case of mean score of a composite of facility perception factors (LifeSpring Hospitals = 3.256 and Others = 2.333) ($p < 0.05^*$).

Among respondents receiving postnatal care, indicating a predisposition for LifeSpring Hospitals for a future delivery, the mean score of a composite of overall perception factors (facility and interactive perception factors) was higher compared to those who reported a predisposition for other facilities (LifeSpring Hospitals = 3.531 and Others = 3.078) ($p < 0.05^*$).

In addition to obtaining responses to questions on demographic factors and perception factors, at the request of LifeSpring Hospitals, we also obtained responses to open-ended questions on price sensitivity. The responses are not provided here as they are not a part of this research study. Responses were also obtained on whether patients would recommend the LifeSpring Hospitals further to friends and relatives. A majority of

respondents (97.63%) agreed or strongly agreed (Table 8). A fair number of respondents (28.40%) said that they anticipated needing to borrow money to pay for delivery at LifeSpring Hospitals (Table 9). These questions were descriptive without any statistical analysis being performed on them.

1.4 Discussion

This study has attempted to identify aspects of patient perception of quality of reproductive healthcare at LifeSpring Hospitals and their impact on patient decisions to reutilize services at the facility. Factors such as age, income level, education level, parity, perception of charges, cost of delivery, proximity of facility to home and facility environment (including a specific doctor, treatment by facility staff, and quality of equipment) do not appear to be important drivers of patient decisions to deliver at this healthcare facility. However, perceptions of the facility including waiting time to see a doctor or nurse, crowding of the waiting room, hours that the outpatient department is open to patients, and perception of interaction skills of staff including adequacy of length of consultation time, explanation of tests and procedures, staff dynamics, comfort level with advice, and patient inclusion in decision making appear to be important drivers of patient decisions to deliver at this healthcare facility.

LifeSpring Hospitals claim that a majority of their patients are semi literate or literate and belong to the low-income group. Demographic information of the respondents gathered in this study appears to be consistent with that claim. The average household income (urban) in India between 2004 and 2005 was around 96000 INR per year (National Survey of Household Income and Expenditure 2004-2005 as cited in 43). Seventy-five percent of this study's respondents earned equal to or less than 10000 INR per month (i.e 120000 INR per year) and this may indicate that a large number of patients receiving maternity care at LifeSpring Hospitals belong to the low to middle income group. India's 2001 census found that out of the total literate population, 40% were

women and of these, 80.2% had some formal education. Ninety-seven percent of this study's respondents were literate, in that they had some level of school education or were graduates and beyond and this may indicate that a large number of patients receiving maternity care at LifeSpring Hospitals were literate.

While drawing inferences from the results in this study it is important to note that it is underpowered and therefore some associations may not have been detected if they existed.

Regarding the reasons for respondents choosing LifeSpring Hospitals for a previous delivery and the decision maker for that choice, the reliability of the data might have been influenced by recall bias. Demographic factors such as age, income level, education level and parity do not appear to be important drivers of patient decisions to deliver at LifeSpring Hospitals in the future, the only exception being age in case of patients receiving postnatal care which may be an anomaly (Table 4). An earlier study by Iqbal (2009) in Bangladesh had also found that patient perception of quality of care did not vary significantly by age or socioeconomic factors. However, another study by Senarath et al. (2006) in Sri Lanka found that patient perception of quality of care was not associated with age but was associated with income levels. None of the reasons such as cost of delivery, proximity to home or facility environment appeared to be more important than another in patient decisions to deliver at LifeSpring Hospitals in the future (Table 6). Previous studies such as Newman et al. 1998 (as cited in 5) have shown that service proximity, costs involved and quality of care in terms of medical outcomes are all associated with patient satisfaction of healthcare services delivery. However, it is

important to note that the Newman et al. (1998) study was carried out during the time healthcare services were being rebuilt after the Mozambique war in 1992 and therefore the priority of patients in terms of aspects of quality of care may have been markedly different from our study setting in Hyderabad. Also, it is important to note that the present study was a sample of patients at LifeSpring Hospitals. Associations might be different in a community based sample.

Current perception of charges at LifeSpring Hospitals also do not appear to be an important factor in patient decisions to deliver at LifeSpring Hospitals in the future (Table 5). However, current perception of LifeSpring's facilities and interactive skills of staff appear to be important drivers of their decision to deliver at the facility in the future. Perception of interactive skills of staff incase of patients receiving perinatal and postnatal care and perception of facilities incase of patients receiving postnatal care do not appear to be important factors in the decision to deliver at the facility in the future. Previous studies such as Rao et al. (2006) and Wong et al. (2004) found that interpersonal skills of staff and hospital infrastructure and environment had an influence on patient perception of quality of care. Therefore it is possible that some of the aforementioned associations may not have been detected even if they existed because the study was underpowered. Limitations- this study had several limitations discussed below which are important to consider when interpreting-

Sample size- Sample size attained was significantly below what was required by the power calculation. The potential reasons for this include certain local customs and superstitions preventing women from visiting facilities on certain days of the month

considered to be inauspicious, length of the survey instrument, lack of adequate translation facilities that included a single translator rotating between facilities and non availability of the translator for the 8th week of surveys, limited time for data collection in the field and a lack of culture among patients of participating in research. A small sample size means that the probability of making a Type II error, not detecting a true difference or an association where it exists, is high due to reduced power.

Selection bias- The study was carried out within LifeSpring Hospitals and only those women who came to the facilities had a chance of being enrolled. Also the voluntary recruitment process through informed consent meant that potential respondents could decline to participate. These might have introduced selection bias wherein some individuals in the target population were more likely to be included than others. The target population includes women of reproductive age who had conceived in the catchment areas around LifeSpring Hospitals facilities. In this study there is a high probability that only those patients who visited LifeSpring Hospitals and those patients who had a favorable opinion of LifeSpring Hospitals facilities might have enrolled and participated in the survey. This means that the survey respondents may not be truly representative of the target population and hence the generalizability of the inference to the rest of the population may be questionable.

Demand characteristic- Previous literature [45] has established that when studies are conducted within health facilities there is a tendency to answer positively to questions about their perceptions and satisfaction levels out of a reluctance to criticize healthcare providers. This demand characteristic could have introduced bias in this study. During

administration of surveys onsite, the interviews were conducted at various locations within the facilities that lacked adequate privacy, such as consultation rooms and medical supplies rooms accessible to hospital staff. This could have impacted the responses of participants apprehensive of being tracked down by the hospital authorities and denied care subsequently based on their survey responses.

Several steps were taken on site to mitigate this bias to the extent possible. For example, patients were directly recruited instead of being referred by the front office staff of the hospital, interviews were halted briefly whenever staff entered interview locations and no inquiries about names or personally identifiable information including exact age of the patients were made.

Recall bias- In regard to questions on the reasons for respondents to report LifeSpring Hospitals for a previous delivery and the decision maker for that choice, there may have been an element of recall bias which is the inaccuracy in the recall of events from the past by respondents.

Measurement error- There is also a probability of measurement error in this study, wherein there is a difference between what was targeted for measurement and what was actually measured. This could be due to poor wording and consequent misinterpretation of questions on the survey questionnaire. Respondents were semiliterate and found it difficult to comprehend some of the questions on the instrument and this created inconsistencies in the administration of the survey instrument.

The More et al. study (2009) in Mumbai, had established that once patients entered the formal healthcare system they generally stuck with it from the time of prenatal care till delivery. The study also established that although women preferred to receive antenatal care at a facility near their home they went to tertiary care hospitals for delivery. This may be due to the perceived overcrowding in the outpatient department and overworked staff at tertiary hospitals. However, they preferred tertiary hospitals for delivery due to a perception that the technical skills of staff to deal with delivery related complications were better. LifeSpring Hospitals claims that trends over the last few years within their facilities indicate an attrition rate of around 60% from the time of registration for prenatal care till delivery. It may be interesting to explore the reasons for this further on the lines of the More et al. study (2009). This study also found no significant associations between perception of charges at LifeSpring Hospitals and a predisposition to deliver at LifeSpring Hospitals in the future. However, responses to open ended questions on the survey questionnaire such as “what can LifeSpring Hospitals do to improve patient experience?” appear to indicate dissatisfaction among patients with respect to transparency of charges. This trend was found in a majority of facilities covered by the survey. It will be useful to more formally explore patient perceptions of products and services purchased from LifeSpring Hospitals and the perceived worth of those products and services through open-ended questions on a survey or a qualitative study through in-depth patient interviews. Questions can also explore whether greater transparency in terms of pricing of products and services is associated with patient perception of quality of care. Moving forward, it might be useful to design a cohort study

that would follow a population of women with access to public and private healthcare facilities and track movements and quantify shifts between private sector and public sector health facilities from the time of prenatal care till delivery and beyond. This would help identify points for intervention both from the point of improvement of the health systems and patient health.

To conclude, the aspects of patient perception of quality of reproductive healthcare (i.e prenatal, postnatal and perinatal care) that impact the predisposition to reutilize facilities that have been explored and identified in this study are useful for healthcare providers such as LifeSpring Hospitals to pinpoint gaps in services or products available to patients at these facilities so as to address patient expectation of good quality institutional maternity care.

Tables

Table-1: Patient volume at five facilities of LifeSpring Hospitals between 1st August 2012 to 31st January 2013

Facility	Average outpatient/day	Average inpatient/day
Chilkaiguda	8.47	23.55
Bowenpally	9.34	31.53
Moula Ali	11.21	23.21
Vanasthalipuram	6.98	30.46
Puranapul	3.4	15.09

Table-2: Demographic profile of the survey respondents

Variable	Overall		Prenatal		Perinatal		Postnatal	
	N (Number)	% (Percentage)	N (Number)	% (Percentage)	N (Number)	% (Percentage)	N (Number)	% (Percentage)
Age								
18 - 25	121	71.60	54	78.26	44	73.33	23	57.50
= or > 26	48	28.40	15	21.74	16	26.67	17	42.50
Total	169	100	69	100	60	100	40	100
Education								
No education	4	2.37	2	2.90	-	-	2	5
Up to 12 th grade	113	66.86	47	68.12	43	71.67	23	57.50
Graduate and beyond	51	30.18	19	27.54	17	28.33	15	37.50
No Response	1	0.59	1	1.45	-	-	-	-
Total	169	100	69	100	60	100	40	100
Household income level								
= or < 10000 INR/month	127	75.15	53	76.81	47	78.33	27	67.50
>10000 INR/month	40	23.67	16	23.19	11	18.33	13	32.50
No Response	2	1.18	-	-	2	3.33	-	-
Total	169	100	69	100	60	100	40	100
Parity								
none	34	20.12	32	46.38	2	3.33	-	-
= or > 1	135	79.88	37	53.62	58	96.67	40	100
Total	169	100	69	100	60	100	40	100

Table-3: Choice of LifeSpring Hospitals for previous delivery based on reason and decision maker for that choice

Variable	Total	Overall			Prenatal			Postnatal		
		No.	%	p-value	No.	%	p-value	No.	%	p-value
Main reason for choice of facility at previous delivery										
Cost of delivery	24	14/17	82.35	0.074	4/6	66.67	<0.05*	10/11	90.91	0.519
Proximity to home	44	19/26	73.08		6/12	50		13/14	92.86	
Facility environment*	67	18/34	52.94		3/19	15.79		15/15	100	
NA (no previous child)	34	-	-		-	-		-	-	
Total	169	51/77	66.23		13/37	35.14		38/40	95.00	
Decision maker at previous delivery										
Self	14	9/10	90.00	0.177	1/2	50	0.398	8/8	100	0.603
Mother	56	19/32	59.38		7/19	36.84		12/13	92.31	
Husband	27	11/14	78.57		3/5	60		8/9	88.89	
Other	38	12/21	57.14		2/11	18.18		10/10	100	
NA (no previous child)	34	-	-		-	-		-	-	
Total	169	51/77	66.23		13/37	35.14		38/40	95.00	

* Facility environment includes a specific doctor at the facility, treatment by the hospital staff, waiting time for consultation and the quality of equipment at the facility.

Table-4: Choice of LifeSpring Hospitals for future delivery based on demographic factors

Variable	Total	Overall		p-value	Prenatal			Perinatal			Postnatal		
		No.	%		No.	%	p-value	No.	%	p-value	No.	%	p-value
Overall	169	169	100	-	69	40.82	-	60	35.50	-	40	23.67	-
Age													
18 - 25	121	115/121	95.04	0.085	54/54	100	1	40/44	90.91	0.212	21/23	91.30	<0.05*
= or > 26	48	42/48	87.50		15/15	100		16/16	100		11/17	64.71	
Total	169	157/169	92.90										
Education													
No education	4	4/4	100	0.780	2/2	100	1	0	0	0.878	2/2	100	0.602
Upto school (12 th grade)	113	106/113	93.81		47/47	100		40/43	93.02		19/23	82.61	
Graduate and beyond	51	46/51	90.20		19/19	100		16/17	94.12		11/15	73.33	
No Response	1	1/1	100		1/1	100		0	0		0	0	
Total	169	157/169	92.90										
Household income level													
= or < 10000 INR	127	120/127	94.49	0.300	53/53	100	1	44/47	93.62	0.881	23/27	85.19	0.237
>10000 INR	40	35/40	87.50		16/16	100		10/11	90.91		9/13	69.23	
No response	2	2/2	100		0	0		2/2	100		0	0	
Total	169	157/169	92.90										
Parity													
none	34	34/34	100	0.071	32/32	100	1	2/2	100	0.701	32/40	80	1
= or > 1	135	123/135	91.11		37/37	100		54/58	93.10		32/40	80	
Total	169	157/169	92.90										

Table-5: Choice of LifeSpring Hospitals for future delivery based on perception of charges at the facility

Variable	Total	Overall			Prenatal			Perinatal			Postnatal		
		No.	%	p-value	No.	%	p-value	No.	%	p-value	No.	%	p-value
Perception of charges at LifeSpring													
expensive	17	14/17	82.35	0.183	8/8	100	1	5/6	83.33	0.464	1/3	33.33	0.109
fair/reasonable	126	118/126	93.65		50/50	100		43/46	93.48		25/30	83.33	
affordable	26	25/26	96.15		11/11	100		8/8	100		6/7	85.71	
Total	169	157/169	92.90										

Table-6: Choice of LifeSpring Hospitals for future delivery based on reason for choice

Variable	Total	Overall			Prenatal			Perinatal			Postnatal		
		No.	%	p-value	No.	%	p-value	No.	%	p-value	No.	%	p-value
Main reason for choice of facility at future delivery													
Cost of delivery	23	20/23	86.96	0.388	10/10	100	1	7/8	87.50	0.496	3/5	60	0.401
Proximity to home	42	40/42	95.24		25/25	100		9/9	100		6/8	75	
Facility environment*	103	97/103	94.17		34/34	100		40/42	95.24		23/27	85.19	
NA (no previous child)	1	-	-		-	-		-	-		-	-	
Total	169	157/168	93.45		69/69	100		56/59	94.92		32/40	80	

53

*Facility environment includes a specific doctor at the facility, treatment by the hospital staff, waiting time for consultation and the quality of equipment at the facility.

Table-7: Choice of facility for future delivery based on current perception of LifeSpring Hospitals

34

Variable	Total	Overall				Prenatal				Perinatal				Postnatal			
		No.	Mean	SD	p-value	No.	Mean	SD	p-value	No.	Mean	SD	p-value	No.	Mean	SD	p-value
Composite of overall perception factors (n=8)																	
Would choose LifeSpring Hospital	169	157	3.570	0.374	<0.05*	69	3.531	0.380	1	56	3.636	0.280	<0.05*	32	3.531	0.488	<0.05*
Would choose Others		12	3.156	0.465		0	-	-		4	3.313	0.331		8	3.078	0.522	
Composite of facility perception factors* (n=3)																	
Would choose LifeSpring Hospital	169	157	3.193	0.611	<0.05*	69	3.179	0.658	1	56	3.256	0.543	<0.05*	32	3.115	0.626	0.103
Would choose Others		12	2.555	0.880		0	-	-		4	2.333	0.981		8	2.667	0.873	
Composite of interaction perception factors** (n=5)																	
Would choose LifeSpring Hospital	169	157	3.793	0.356	<0.05*	69	3.742	0.357	1	56	3.864	0.230	0.760	32	3.781	0.501	0.062
Would choose Others		12	3.517	0.788		0	-	-		4	3.9	0.115		8	3.325	0.919	

*facility perception factors include-
 1) waiting time to see a doctor or nurse
 2) crowding of waiting room
 3) hours that outpatient department is open to patients

** interaction perception factors include-
 1) adequacy of length of consultation time
 2) explanation of tests and procedures
 3) staff dynamics
 4) comfort level with advice
 5) patient inclusion in decision making

Table-8: Response to: “I would recommend this facility to my family and friends”

Response category	Percentage
Strongly disagree	0.59
Disagree	0.59
Do not know	1.18
Agree	4.73
Strongly agree	92.9
Total	100

Table-9: Response to: “Do you anticipate needing to borrow money to pay for a delivery at Life Spring hospital?”

Response category	Percentage
Yes	28.4
No	71.6
Total	100

Appendix A
Customer assessment of quality of care

What service are you getting at LifeSpring hospital?

Prenatal (out patient)

Delivery (in patient)

Postnatal (out patient)

1 What is your age?

- a) 18-20 b) 20-25 c) 26- 30 d) 31-40 e) More than 40

2 How much education do you have?

- a) Primary (class 1 to class 5) b) Secondary (class 6 to class 10)
c) Intermediate (class 11 to class 12) d) Graduate
e) Post graduate f) No education

3 What is the income level of your family in Rs/month?

- a) Less than 5000 b) 5,000 – 10,000
c) 10,001- 15,000 d) More than 15001

4 How many children do you have?

- a) 1 b) 2 or more

5 If you have had a child before where did you deliver your last child?

- a) Government Hospital b) Private Hospital- Life Spring
c) Private Hospital- Other d) Home

6 In choosing this option, what aspect was most important to you and your family?

- a) Cost of delivery b) Proximity to home
c) Specific doctor at hospital d) Treatment by hospital staff
e) Waiting time f) Hospital facilities/equipment

7 Who in your family made/will make the decision on where to deliver?

- a) Self
- b) Mother
- c) Mother-in-law
- d) Husband
- e) Other

8 Please rate each of the following on how important it is in determining the quality of a healthcare facility.

(1 = not important and 5 = very important)

a) Skill of clinical staff

1 2 3 4 5

b) Good communication by staff, e.g. doctor explaining well, listening, and answering questions.

1 2 3 4 5

c) Cleanliness of hospital

1 2 3 4 5

d) Quality of equipment/facilities in the hospital.

1 2 3 4 5

e) Short waiting time.

1 2 3 4 5

9 Rate LifeSpring hospital on the length of time you have to wait to see a doctor or a nurse.

(from poor = 1 to excellent = 5)

Poor fair good very good excellent

10 Rate LifeSpring hospital on the crowding of the waiting room.

(from poor = 1 to excellent = 5)

Poor fair good very good excellent

11 Rate LifeSpring hospital on the hours it is open to patients.

(from poor = 1 to excellent = 5)

Poor fair good very good excellent

Please rate your level of agreement with the following statements

(from Strongly disagree = 1 to Strongly agree = 5)

12 In this or prior visits, the length of time that the doctor or nurse spent with me in consultation was adequate.

Strongly disagree Disagree Do not know Agree Strongly agree

13 In this or prior visits, the doctors explained why a test (such as ultrasound, blood test or urine test) was being done.

Strongly disagree Disagree Do not know Agree Strongly agree

14 In this or prior visits, the hospital staff worked well together.

Strongly disagree Disagree Do not know Agree Strongly agree

15 In this or prior visits, the doctor asked me if I felt comfortable following the advice he/she gave.

Strongly disagree Disagree Do not know Agree Strongly agree

16

In this or prior visits, the doctor tried to include me in decisions about pregnancy care

Strongly disagree Disagree Do not know Agree Strongly agree

I would recommend this facility to my family and friends

17 Strongly disagree Disagree Do not know Agree Strongly agree

Charges at LifeSpring hospital are affordable.

18 (from very expensive = 1 to very affordable = 5)

Very expensive expensive fair reasonable affordable Very affordable

Do you anticipate needing to borrow money to pay for a delivery at

19 Life Spring hospital?

Yes

No

Which facility would be your first choice for delivery? Circle only

20 one.

a) Government Hospital

b) Private Hospital- Life Spring

c) Private Hospital- Other

d) Home

e) Other

Which of the following factors is the most important in making this

21 decision? Circle only one.

a) Cost of delivery

b) Proximity to home

c) Specific doctor at hospital

d) Treatment by hospital staff

e) Waiting time

f) Hospital facilities/equipment

How much would you be willing to pay for a OP visit?

22

How much would you be willing to pay for a normal delivery?

23

How much would you be willing to pay for a c-section?

24

What can LifeSpring hospital do to improve your experience?

25

What do you like most about LifeSpring hospital

26

Appendix B
Recruitment and informed consent

My name is PRIYA KRISHNAN and I am a researcher at the Duke Global Health Institute, Duke University. I would like to invite you to participate in a research study on patient perceptions and how they influence health choices. We are conducting surveys of outpatients and inpatients at LifeSpring hospital. **Can I tell you more about my research so that you may decide if you would like to complete my survey?**

Yes

No

Thank you!

My survey is intended to gather information that will help us assess how health care services at LifeSpring hospital could be further improved based on your feedback. I also want to use this information for to do a research study for my university.

We are interested in learning about your experiences. The survey will take about 15 minutes. Your participation is voluntary. This means that you do not have to complete the survey if you do not want to. If you do choose to complete the survey, you can skip questions you do not want to answer and you are free to stop the survey at any time.

Because my research is intended for LifeSpring hospital, I will share my research data with them. However, the survey does not ask you to provide your name or other identifiable information about yourself. Therefore the information we will collect will not directly or indirectly identify you.

There is no compensation to you; however we would very much appreciate your participation.

Keep in mind that you do not have to complete the survey if you do not want to. Your choice will have no affect on any of the services you receive at LifeSpring, now or in the future.

If you have any questions for me, please feel free to ask me now. Also, please feel free to contact me with any questions that you might have later. You are being provided a contact card for this purpose that has the following information-

Priya Krishnan,
Student Resources Room,
DGHI,
Trent Hall, Trent Drive,
Durham, NC 27705.
Telephone- 919-681-7760

Dr. Krishnakumar Udayakumar,
Suite 1117 Davison Building,
Telephone- 919-668-7125.

Duke Research Ethics Committee,
Suite 710 Erwin Square,
2200 W. Main Street,
Durham, NC 27705.
Telephone- 919.684.3030

Would you like to complete my survey?

Yes

No

Appendix C
Code Sheet for Data Analysis

Variable	Category	Code
mage	18 -25	0
	= or > 26	1
Education	no education	0
	upto school	1
	graduate and beyond	2
	no response	3
income	< 10000 INR	0
	> 10001 INR	1
	no response	2
children	none	0
	= or > 1	1
Acharges	expensive	0
	reasonable	1
	affordable	2
Facilityp	private LS	0
	other	1
	not applicable	2
Reasonp	cost of delivery	0
	proximity to home	1
	facility dynamics	2
Decmaker	self	0
	mother	1
	husband	2
	other	3
Facilityf	private LS	0
	other	1
Reasonf	cost of delivery	0
	proximity to home	1
	facility dynamics	2
	no response	3

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