

## The determinants and costs of bypassing small hospitals in a 'free' health system: A cross sectional study in Sri Lanka

S. K. Perera<sup>1\*</sup>, M. C. Weerasinghe<sup>2</sup>

### Abstract:

#### Background:

Rising out-of-pocket health expenditure due to policy issues is a major factor contributing to deterioration of efficiency and equity of healthcare systems.

#### Objective

of this study was to estimate the determinants of bypassing divisional hospitals in Sri Lanka, and to estimate the effect of bypassing behaviour on the direct out of pocket costs of the patients.

#### Methods

The study employed a hospital based cross sectional analytical design. Out patients department of District General Hospital – Gampaha was selected as the referral facility. Out patients departments of the two selected divisional hospitals were selected as the bypassed facilities. The patients who bypassed the two divisional hospitals and attended the out patients department of the general hospital were identified using a screening tool and a map. The reasons for bypassing were evaluated among those who bypassed. Out of pocket costs of the bypassed were assessed using an interviewer administered questionnaire and compared with the patients who did not bypass the divisional hospitals. Bivariate analysis of the out of pocket expenditure was performed using the Mann-Whitney test, placing the level of significance at 0.05.

#### Results

Patients who bypassed the divisional hospitals were more likely to be married, permanently employed, and have monthly incomes above Rs. 20000. The mean out of pocket expenditure for travelling of bypassed patients and their family members was more than four folds higher than those who did not bypass. The out of pocket expenditure on meals and snacks was also higher among the bypassed. However, more patients among the bypassed group had to spend on outside purchase of medicine and investigations. The average out of pocket expenditure among the bypassed group was about 75% greater than (Rs 63/= more) their counterparts who did not bypass.

#### Conclusions

Bypassing increases the out of pocket expenditure of patients. A primary care based model with designated draining areas and proper referral policies would help to address the issue.

**Key words:** Out of pocket health expenditure, Bypassing.

1. National STD/AIDS Control Programme, Ministry of Health, Nutrition and Indigenous Medicine

2. National Programme for TB Control and Chest Diseases, Ministry of Health, Nutrition and Indigenous Medicine

\*Correspondence: buddhikasena@yahoo.com

DOI:10.4038/jccpsl.v22i1.8087

## Introduction

Bypassing of health care facilities, is defined as travelling past a free or subsidized health care facility to reach another facility which is located in a far away location (1). The bypassed facility is usually a higher level hospital. Bypassing of patients from one free health center to another for treatment of minor ailments is of special concern, particularly in the Sri Lankan context where healthcare is provided "free at point of delivery" on an equitable basis.

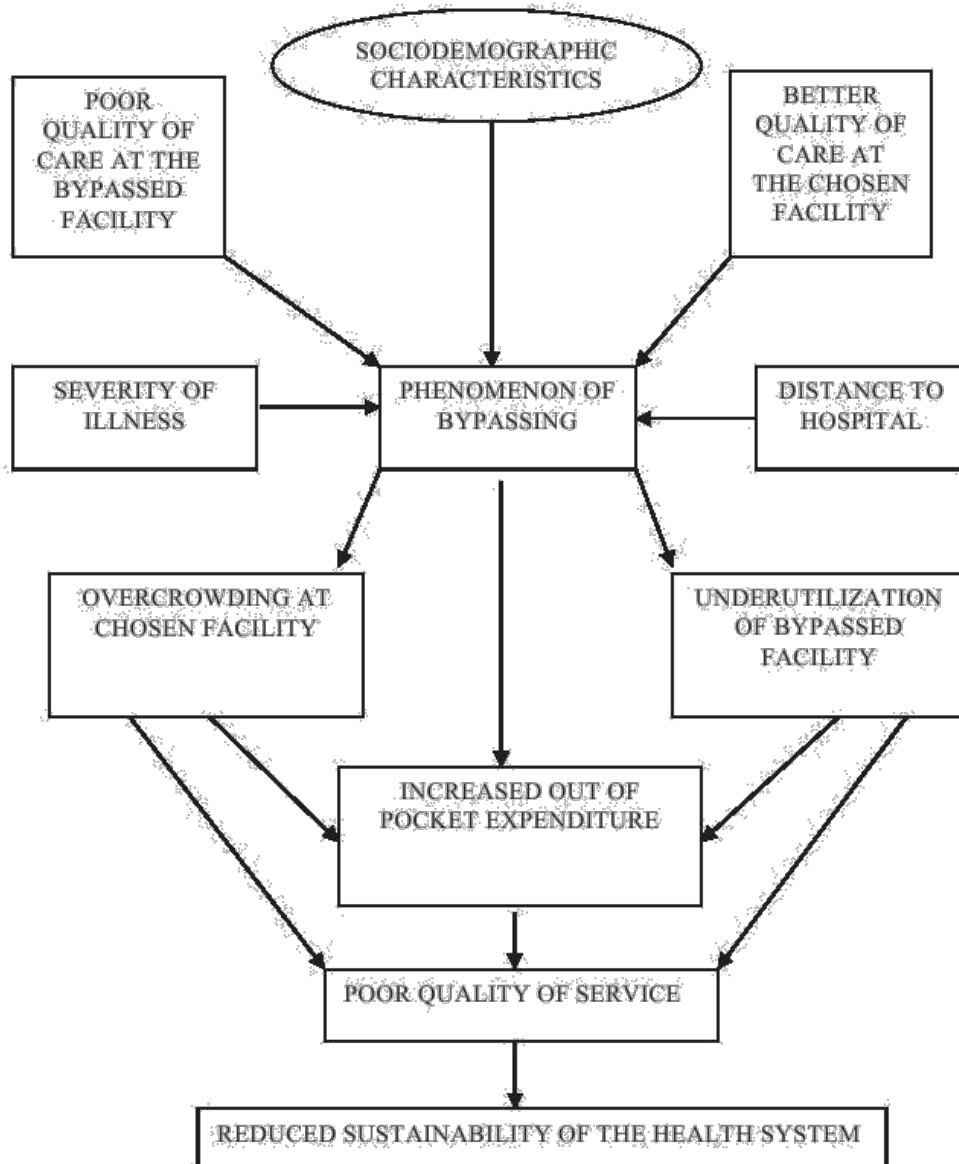
Overall rate of bypassing has been high as 66.5 % in relation to health facilities of Matale district, Sri Lanka (1). Out of all bypassed visits 40% has been from 'minor public western' to 'major public western facilities, both being "free at point of delivery" providers.

Bypassing is a powerful indicator of public preference for health care services. A high rate of bypassing is shown to have important

implications on the efficiency and coverage of health services (2). Bypassing behaviour deviates the patients away from the primary health care facilities located closer to their homes. Under utilization of these facilities could lead to impaired performance and impede resource allocations. Invasion of the higher level facilities by patients with minor ailments causes overcrowding of the higher level facilities and induces a reduction of service quality. The direct out of pocket health expenditure also increases as these patients who travel long distances spend more money and more time in seeking health care (3). When patients travel extra distance for care, the indirect expenditure also increases due to disruption of income generation activities.

The focus of this study was to identify key determinants of the bypassing behaviour and to estimate the direct out of pocket costs due to bypassing two selected divisional hospitals in Sri Lanka.

**Figure 1** Conceptual framework on bypassing, its determinants and consequences



**Please note that this section on Methods and part of Results of the article has been added recently since this section has been erroneously omitted from the original article published in this issue of the journal.**

#### **Methods:**

This study employed a hospital based cross sectional analytical design. Three study settings were purposively selected. Outpatients department (OPD) of the District General Hospital (DGH) Gampaha, was selected as the referral facility. Outpatients departments (OPD) of the District Hospital (DH) Dompe and Rural Hospital (RH) Udupila were selected as the bypassed facilities. Since the populations in the draining areas of these hospitals were stable any systematic error arising from such population inflows/outflows would have been minimal.

The DGH Gampaha, located close to Gampaha town, is conveniently accessible to patients living in the draining areas of DH Dompe, and RH Udupila. DGH – Gampaha has most standard basic facilities that should be there in an intermediate level referral center. In respect to human resources, it has specialist consultant services in general medicine, general surgery, paediatrics, obstetrics and gynaecology, ophthalmology, and ENT surgery with in ward facilities. Consultants in dermatology,

psychiatry, cardiology, visit the hospital to conduct specialized clinics. Apart from highly sophisticated investigations like CT scan, and MRI many other investigatory facilities are available at DGH – Gampaha. Therefore, it acts as a main referral center for the surrounding divisional hospitals.

Conversely, the services in the divisional hospitals are catered through a group of health care personnel led by non-specialized doctors. Inward facilities are available in many of these hospitals. However, the basic diagnostic facilities are less abundant in these settings, compared to DGH. Out of the main divisional hospitals in the district, District Hospital (DH) – Dompe is located about 20 km from DGH – Gampaha along the main bus route linking the two hospitals. Rural Hospital (RH) - Udupila is located about 14 km from DGH-Gampaha, and only about 500 m from the main bus route. DGH – Gampaha is the closest and possibly the only referral center within the district for patients living around the draining areas of these divisional hospitals.

The inclusion criteria for participants in the referral facility (DGH Gampaha) were, age more than 18 years, residing in the draining areas of the two divisional hospitals and attending the OPD for treatment of any ailment. Patients referred by General practitioners, other

nonwestern practitioners and by the medical officers of the divisional hospitals were excluded. In DH Dompe and RH Udupila, adult patients over 18 years of age attending the OPD for any ailment were selected.

All the procedures involving the patient subjects were performed in compliance with the Helsinki Declaration. The ethical clearance was obtained from the Ethics Review Committee of the University of Colombo, Sri Lanka. Patient autonomy was respected, and informed written consent was obtained prior to collection of data. All steps possible were followed to ensure privacy in data collection and confidentiality of the patient information. The interview was conducted in a separate area, away from the exposure of hospital staff. Patient information was not revealed to any third party.

Sample size was calculated to give 80% statistical power and to accommodate for 10% non-response rate. There was a total of 234 patients (117 in each group). A two-stage sampling technique was used. In the first stage a proportionate number of OPD sessions (morning and afternoon) from each study setting was selected randomly. In the second stage the required number of patients for each OPD session was selected systematically with consistent time gaps to ensure equal distribution

of the sample, throughout the entire session. It was ensured that any selected OPD session did not fall on public holidays or on any other day of special importance to public, to improve comparability.

During the selection of patients, screening was performed to ensure that only the patients meeting the specified inclusion and exclusion criteria were included. Screening involved direct questioning on the place of residence and verifying it using a 1: 50000 area map.

The questionnaire to be administered by trained interviewers was designed, considering the specific objectives of the study. It consisted of three parts.

Part one, consisted of questions on the socio demographic information of the patient like the age, gender, marital status, occupational status, monthly/daily income, educational status. Part two, consisted of geographical information like the address of patient, closest town, distance from home to the relevant health facilities (according to the patients' perception). Part three consisted of questions to assess out of pocket expenditure of patients in relation to the current visit to the hospital. The assessment of out of pocket expenditure on travelling, snacks and meals was totally based on the information provided by the patient. The exact value

provided by the patients was recorded. In calculating the out of pocket expenditure for medicine and investigation, a twostep procedure was performed. Firstly, the medicine and investigations prescribed by the doctor was copied from the prescription to the questionnaire. All medicine was recorded in exact name prescribed by the doctor, whether generic or brand. Calculation of prices was done according to a list obtained from the State Pharmaceutical Cooperation. When a medicine was prescribed in brand name, the price of the generic product was recorded as much as possible. This was done with the objective of ensuring uniformity of price calculations to counterbalance the effect of inequalities in prescription patterns of doctors in all 3 study settings. This method has been used in many other studies to allow meaningful comparisons across time and different settings (Weerasinghe 2005, Weerasinghe 2010). When an equivalent generic product was not available, the price of the exact brand was recorded. Cost of investigations was calculated using a price list obtained from the closest private sector laboratory to each hospital.

The questionnaire was pretested on a sample of ten patients at the OPD of DGH Gampaha, one month prior to the conduction of the study proper. This was performed to assess the

completeness of questionnaire, the patient's ability to understand the questions, the time taken to administer the questionnaire and to modify the questionnaire where relevant. Three retired government employees of similar educational and socioeconomic backgrounds were selected as data collectors for the study. A three-day training session was conducted by the principal investigator.

A timetable was prepared according to the randomly selected OPD sessions utilized for the study. Data collection was performed simultaneously in all three study settings, during the first two weeks of the month of August 2011. The questionnaire was provided to the data collectors in advance. The data collectors were present at the study settings prior to the start of proceedings in each session. The principal investigator was present in the study settings for supervision and assistance. Patients were interviewed only after all treatment procedures were finished and patient has obtained drugs from the outdoor pharmacy of the OPD to minimize bias related to reluctance of patients in revealing any negative feelings, when they are in the treatment setting.

In recording of data relevant to the assessment of the patients direct out of pocket expenditure, medicines, material and equipment prescribed

outside was recorded with their dosages / amounts. The assistance of doctors was obtained when the data collectors encountered problems in recording the details of prescribed medicine and investigations accurately. The calculation of the out of pocket expenditure was performed at latter stage according to the price list of the State Pharmaceutical Cooperation. When the SPC counterpart of a prescribed medicine was not available, the prevailing market price of the exact product was used for calculations.

**Results:**

Sample size for the study was 234. Based on the inclusion criteria, 117 patients each from the two study settings were interviewed. Response rate was 100%.

**Socio demographic profile of the patients who bypassed with those who did not**

Differences of socio demographic factors between the two setting in this study are published elsewhere (4). There was no significant difference in age and sex distribution of the two groups (bypassed and non-bypassed). Both study populations showed a female dominance of OPD attendance ( $\geq 60\%$ ). Those who bypassed were more likely to be currently married ( $p < 0.05$ ), permanent full time employees of government and private sector ( $p < 0.05$ ) and they were more likely to have higher ( $>20000$ ) incomes.

**Please note that this section on Methods and part of Results of the article has been added recently since this section has been erroneously omitted from the original article published in this issue of the journal.**

**Table 1** Comparison of the out of pocket expenditure of the patients who bypassed with those who did not

Out of pocket expenditure	Bypass Status	Effective Sample Size	Mean	SD	Median	Mann-Whitney test Z (p)
On medicine	Bypassed	18	245.89	223.35	132.00	0.00
	Non bypassed	36	246.25	202.45	167.50	(p= 1.0)
For prescribed investigations	Bypassed	2	390.00	127.28	390.00	0.21
	Non bypassed	11	428.18	303.61	480.00	(p=0.833)
For travelling of the patient	Bypassed	120	85.47	116.22	40.00	9.08*
	Non bypassed	120	19.27	18.16	19.00	(p= 0.000)
Additional cost for travelling of accompanying person	Bypassed	29	33.24	14.85	36.00	5.74*
	Non bypassed	33	6.73	10.24	0.00	(p= 0.000)
For meals and snacks	Bypassed	48	48.13	24.94	50.00	1.52
	Non bypassed	21	38.19	17.25	35.00	(p= 0.129)
Total out of pocket expenditure	Bypassed	120	147.38	179.96	72.00	5.69*
	Non bypassed	120	84.18	138.99	39.00	(p= 0.000)

\*(p<0.05)

The commonest reason given by the patients who bypassed the local hospital was the perception of availability of better facilities in the general hospital.

Table 1 informs the differences among the two study groups on direct out of pocket expenditure during the present visit to hospital. The effective sample size was considered to be the subjects to whom the respective question was relevant. For example, those who were not prescribed medicine for outside purchase were excluded from the analysis for that category.

Mean out of pocket expenditure for medicine was only slightly different among the two

groups. However it was evident that fewer patients who bypassed had to purchase medicine from outside, compared to who did not bypass (p < 0.05). Mean out of pocket expenditure for travelling of the patients who bypassed (Rs 85.47) was four folds higher than among the patients who did not bypass (Rs 19.27) (p<0.05). Out of pocket expenditure on meals and snacks was also higher in the bypassed group (Rs 48.13) than the non bypassed (Rs 38.19).

It was also estimated that the patients who bypassed the peripheral hospital spent, on average approximately Rs 63/= more (75% increase) per visit, than their counterparts who did not bypass (p<0.05).



## Discussion

A diverse range of definitions have been used in the past to define "bypassing". Some authors have used post code methods, by defining it as travelling to a hospital located in a different post code (6). In countries where there are well demarcated counties, it has been defined as crossing of county boundaries (7). Definitions based on straight line distance to health facility (8) and as travelling past a health facility to reach another (1, 9) has also been used in the past. Well demarcated draining areas for hospitals and clear referral policies have not been set up in Sri Lanka. The absence of a well established post code system restricted using such post code based definitions of bypassing in Sri Lanka. Therefore, "travelling past a divisional hospital to reach the general hospital which is located at a higher distance" was considered as bypassing for this study.

In evaluating the impact of bypassing behavior on the out of pocket expenditure, it was observed that the cost of travelling and snacks were significantly higher among the bypassed. However, a higher percentage of non-bypassed patients had to purchase medicine and perform investigations from outside the hospital. Given the fact that more medicine and diagnostic facilities are actually available in the referral facility (general hospital), doctors there would have had many diagnostic and therapeutic options within the hospital itself. Therefore they prescribed medicine and investigations for outside purchase, less often than the doctors in the divisional hospitals.

Out of pocket expenditure for travelling of the patient was more than 4 times higher among those who bypassed, than those who did not. There were few reasons contributing to the observed difference of out of pocket expenditure for travelling, in the two groups. Firstly, there were a higher percentage of patients who used

cost free transport mechanisms such as walking and foot cycling among those who chose the divisional hospital. In the same group, there were more patients who used relatively cost effective transport mechanisms such as motor cycle. Flipside, there were more patients among the bypassed, who used relatively expensive options such as owned three wheeler, car or van. Additional cost for travelling of the persons accompanying the patient was also high among those who bypassed, due to the same reasons.

Overall, the patients who bypassed the divisional hospital spent, on average approximately Rs 63/= (75% increase) more per visit, than their counterparts who did not bypass. It is possible to suggest that the extra cost is higher for patients in the districts where health facilities are less abundant and public transport facilities are lacking.

The positive association between bypassing and the rising out of pocket expenditure of patients has been proven by the past researchers too (3). These out of pocket payments create financial barriers to accessing health care. In a study done in three districts of Sri Lanka (Nuwara-Eliya, Hambantota & Amuradhapura) the average out of pocket expenditure for OPD treatment was Rs 374/= and it accounted for 13.1% of the monthly individual income (10).

The value of extra money spent on health care should be weighed against the household income to understand the impact of this amount. It could be suggested that Rs 63/=, which is the amount of average additional out of pocket expenditure estimated in this study would have been a significant amount for those patients who reported monthly incomes of less than Rs 5000/=.

Even though an assessment of rates of bypassing was not done in this study, the available evidence in the local context show that 40% of patients

bypass 'minor public western' facilities to the higher level public facility (1). There have been approximately 25 million OPD visits to referral level hospitals in year 2012 (11). Out of these visits, approximately 10 million (40% of 15 million) would have been bypassed visits. It has been estimated that the cost of one OPD visit in a complex hospital (DGH) is about 10 times that of a basic or intermediate hospital (DH, RH) expressed as ratio of per capita daily gross domestic product (12). Therefore, apart from the significant rise in out of pocket expenditure, the additional cost to the state due to 6 million bypassed visits for outpatient care, would have been extravagant.

In summary, we could conclude that bypassing behaviour increases the out of pocket expenditure of patients. Therefore, it is a priority issue in health care delivery system of Sri Lanka, in the country's path towards achieving universal health coverage. The effective policy changes could come in many ways. Establishing designated draining areas and draining populations to each health care provider, and the development of clear referral policies to reduce bypassing of hospitals is one such strategy. Enforcing therapeutic guidelines and prescribing policies in health facilities could also reduce outside referrals for purchase of medicines and investigations. The state must also strive to improve the physical facilities of the primary care hospitals, without which the restrictive policies could induce more harm than good.

#### **Competing Interests**

The authors declare that they have no competing interests.

#### **Acknowledgement**

We acknowledge the Education Training and Research Unit of the Ministry of Health, in funding this research project. The ethical clearance was granted by the Ethical Review Committee of the

Faculty of Medicine, University of Colombo on 19.07.2011 (Reference number: EC-11-074).

#### **References**

1. Akin JS, Hutchinson P. Health-care facility choice and the phenomenon of bypassing. *Health Policy and Planning*. 1999;14(2):135-51.
2. Leonard KL, Mliga GR, Marian DH. Bypassing health centres in Tanzania: revealed preferences for quality. *Journal of African Economics*. 2002;11:441-471.
3. George G, Sara B, Kent R, David G. Health care-seeking behaviour and out-of-pocket payments in Tbilisi, Georgia. *Health Policy and Planning*. 2005;20(4):232 – 42.
4. Perera SK, Weerasinghe MC. Bypassing primary care in Sri Lanka: a comparative study on reasons and satisfaction. *Vietnam Journal of Public Health*. 2015; 3(1)
5. Weerasinghe MC, Fernando DN. Access to care in a Plural Health System: Concerns for policy reforms. *Journal of Community Physicians of Sri Lanka*. 2009 14(1): 39-45.
6. Weerasinghe MC. Establishing a baseline to monitor public health implications of new Intellectual Property Rights regime on pharmaceuticals in Sri Lanka. *Health Action International Asia Pacific*. 2010.
7. Buczko W. Bypassing of local hospitals by rural medicare beneficiaries. *Journal of Rural Health*. 1994; 10:237 - 246.
8. Basu J, Cooper J. Out-of-Area Travel From Rural and Urban Counties: A Study of Ambulatory Care Sensitive Hospitalizations for New York State Residents. *The Journal of Rural Health*. 2000;16:129-138.

9. Bronstein JM, Morrissey MA. Bypassing rural hospitals for obstetrics care. *Journal of Health Politics Policy Law*. 1991;16:87-118.
10. Ministry of Health Sri Lanka. Measures of Equity, Efficiency, and Quality of Selected Healthcare Services. Health Main Report. Ministry of Health Sri Lanka. 2008. <http://203.94.76.60/AHF/publication/Books%20need%20to%20entry%20to%20AHF%20web/Health%20main%20report.pdf> (2008). Accessed 05 Jul 2015.
11. Ministry of Health Sri Lanka. Annual Health Bulletin. Ministry of Health Sri Lanka. <http://www.health.gov.lk/en/publication/AHB-2012/Annual%20Health%20Bulletin%20-%202012.pdf> (2012). Accessed 05 Jul 2015.
12. Raman-Eliya RP, Sikurajapathy L. Sri Lanka: "Good Practice" in Expanding Health Care Coverage. Colombo: Institute of Health Policy. [www.ihp.lk/publications/docs/RSS0903.pdf](http://www.ihp.lk/publications/docs/RSS0903.pdf) (2009). Accessed 05 Jul 2015.