NON-COMMUNICABLE DISEASES AND PAKISTAN'S SEHAT SAHULAT PROGRAM: SNAPSHOT ANALYSIS OF READMISSIONS IN ISLAMABAD CAPITAL TERRITORY

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ABSTRACT

Objective: To examine the impact of 30-day hospital readmission for non-communicable diseases on limited health-care resources of a low-income country like Pakistan in the light of available data from Pakistan's Sehat Sahulat Program.
Study Design: Retrospective analytical cross-sectional study.
Place and Duration of Study: Health Services Academy, Islamabad Pakistan, from Jan 2016 to Jul 2020.
Methodology: Secondary data of patients readmitted with non-communicable diseases in Sehat Sahulat Program, Islamabad, Pakistan. Universal sampling technique was utilized. Data was analysed using SPSS version 25.
Results: Islamabad (ICT) stands second highest for readmissions (n=1270) in which the 30-days readmission rate was 13.69%. Maximum number of readmissions were found in 50-59 years (344, 27.12%). Of 1270 ICT readmissions, 559 (44%) cases were readmitted with non-communicable diseases while rest of 711 (56%) cases were readmitted for acute infectious diseases or surgical procedures. Of 559 non-communicable diseases cases, 236 (42.21%) readmissions were having one non-communicable disease, 63 (11.27%) readmissions exhibited two or more non-communicable diseases and 260 (46.51%) were readmitted because of cancers (CA). Among males, the most common malignancy was CA lungs/ bronchus 24 (19.8%) while among females, CA Breast 80 (56.3%).
Conclusion: Non-communicable diseases represent a significant burden on resource constrained, low-income countries. In view of the recurrent admissions that these chronic diseases inevitably incur, better resource allocation may help lessen this burden on fragile health systems creating better clinical outcomes for the penurious strata of Pakistan's population.

Keywords: Health expenditure, Non-communicable diseases, Readmission, Snapshot analysis.

How to Cite This Article: *Mashhadi SF, Maroof S, Hisam A, Masood S, Riaz S, Malik AA, Rifaq F, Khan SA, Hafeez A. Non-Communicable Diseases and Pakistan's Sehat Sahulat Program: Snapshot Analysis of Readmissions in Islamabad Capital Territory. Pak Armed Forces Med J 2021; 71(5): 1534-1538. doi: https://doi.org/10.51253/pafmj.v71i5.7470*

INTRODUCTION

In Pakistan, the world's largest health insurance initiative Sehat Sahulat Program (SSP–Sehat: Health, Sahulat: Facilitation)[1] (previously known as Prime Minister's National Health Program) is an ongoing federal cashless enterprise since late 2015. SSP provides services to individuals below poverty line and registered in Benazir Income Support Programme (BISP) with Proxy Mean Test (PMT) ≤32.5, verified by National Database and Registration Authority (NADRA) of Pakistan. Program design features were embraced from US Medicaid and Indian models, for tertiary and secondary care respectively.[2] Readmissions can be planned or eventual. Eventual readmissions can be avoided if they are because of poor quality of care received, low standard post-discharge care or inadequate diagnostic work during hospital stay. However, some unavoidable reasons can be due to Post-Hospital Syndrome,[3] as patients' susceptibility to disease increases as their stay in hospital increases overall stress by affecting their diet, sleep and activity. These kinds of readmissions warrants having an insight into patients profile.[4]

A person after discharge from hospital readmits into health care setting in a short duration of time is termed as hospital readmissions. Studies consider different periods to define readmitted case ranging from within 72 hours to up till one year. Hospital readmission causes physical, mental and social harm to patients, decreases their quality of life, and also places tremendous burden on the health care system.[5] About one quarter of the hospital readmissions are possibly avoidable by appropriate counselling, better communication, and quality nursing care to the patient at the time of discharge.[6,7] Non-communicable diseases (NCDs) are associated with recurrent hospitalizations. These readmissions can be controlled if the factors are identified in health care settings and dealt with strategically. The

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Received: 05 Oct 2021; revision received: 07 Oct 2021; accepted: 08 Oct 2021

risk factors, morbidity and out of pocket (OOP) loss associated with NCDs can be reduced to a significant level with appropriate measures at family, community and national level.[6] Older adults and people of any age who have underlying medical conditions, such as hypertension (HTN) and diabetes mellitus (DM), have shown worse prognosis.[8] Diabetic patients have increased morbidity and mortality rates and have been linked to frequent hospitalizations and Intensive Care Unit (ICU) admissions.[9] Patients with Chronic obstructive pulmonary disease (COPD) or any respiratory illnesses are also at higher risk for severe illness from COVID-19.[10] Globally efforts are diverted to reduce the hospital readmission rate in turn to reduce the health care expenditures and decrease the OOP loss.[5]

This in turn increases the burden on a fragile healthcare systems where paucity of resources means poor clinical outcomes for these patients, particularly when they are experiencing readmissions due to the chronic nature of NCDs. Taking into account the latest data available from SSP, we describe and analyze this health information with special focus on readmissions due to NCDs in federal capital (Islamabad) of Pakistan. The 30-days readmissions are associated with increase health care cost and reduced quality of life of patients.

Islamabad is among six districts of Pakistan with low poverty index (0.06)[1] 9 hospitals empaneled in SSP. In Pakistan, SSP claims to reach 11 million population as compared to India 's "Ayushman Bharat–National Health Protection Scheme" started in 2018 and claims to be one of the largest government health insurance schemes in the world to benefit 100 million individuals.[10]

Factors associated with increased hospital readmissions are avoidable and reducible. Policy makers are now of the opinion that reducing hospital readmissions will lower the cost of health care expenses and improve quality of life. Reportedly, this snapshot analysis is the first report in the region on readmissions in a government sponsored health insurance initiative. Researchers, health care managers and policymakers have increased belief that 30-day readmissions is a quality assessment tool of health care settings and a benchmark to assess health care performance. By looking at the readmission rate in the programme, stakeholders can compare health care institutions and initiate corrective actions accordingly for performance indicators.

Thailand is one the first developing country whose entire population is covered by Social Health insurance. In Malaysia, the entire population is protected by public health services, while in Singapore, 93% of the population is covered by MediShield, the government organized health insurance scheme while 60% of Indonesians are covered by health insurance.[11]

METHODOLOGY

A retrospective analytical cross-sectional study was conducted at Health Services Academy Islamabad, Pakistan, analyzing data from January 2016 to July 2020 by employing universal sampling technique. This was a secondary data analysis in which the data was obtained from SSP, Islamabad. This study was conducted according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[11]

Inclusion Criteria: The population was homogenous in terms of socio-economic status as it included all THE Pakistani nationals enrolled in Sehat Sahulat Program.

Exclusion Criteria: Nil

The primary outcome was readmissions in SSP empaneled hospitals with the primary NCD within 30 days post discharge. The proportion of NCDs and readmission rates for four years were calculated for each morbidity. There was no primary data collection process involved at any stage. Prior clearance was obtained from the Institutional Review Committee of Health Services Academy, Islamabad, Pakistan. Since no personal patient identifiers were used in the data analysis Principal investigator-maintained data confidentiality and integrity by allotting anonymous identification numbers to the collected data.

The collected data were entered into Microsoft Excel. Frequency and percentages were calculated for the diseases showing readmissions and presented in the form of graphs and tables using Microsoft Excel. Further analysis was performed using Statistical Package for Social Sciences version 27. Chi square test of significance was applied on categorical data. p-value ≤ 0.05 was taken as significant.

RESULTS

Sehat Sahulat program offers treatment under two categories, one is secondary care which covers the emergency care, surgical procedures, maternity care and all other in-patient services and funeral services, while the second category offers priority treatment for NCDs.

Till 20th July 2020, the total Total enrollment of SSP all across 38 districts of Pakistan was 6,748,769 individuals. Total hospital visits recorded till 20 July were 1,107,877. Total families in Islamabad district were 104,101 out of which 60,890 (58.5%) were enrolled, making 0.9% enrollment rate for ICT. Total admissions for various diseases in empaneled hospitals of SSP were

281,422 and proportion of admissions in Islamabad empaneled hospitals was 9728 (3.4%). As far as readmissions were concerned Islamabad stands second highest with 1270 readmissions. Readmission rate was 13.69%. The details of other districts are shown in the Figure-1.

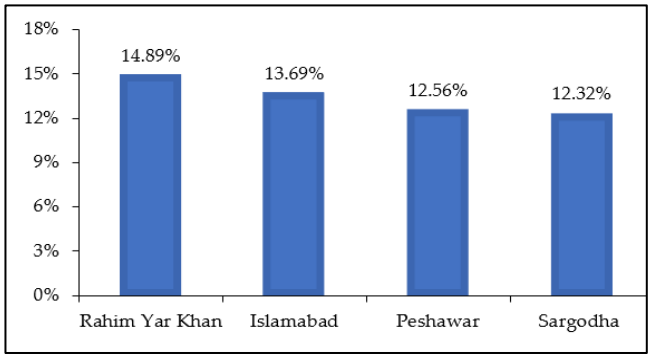

Figure-1: Hospital Readmissions in various Districts of Pakistan under Sehat Sahulat Program.

Among 1270 ICT readmissions, mean age was 53.01 ± 11.42 years. Of 1270 readmissions, 559 (44%) cases were readmitted with NCDs while rest of 711 (56%) cases were readmitted for acute infectious diseases or surgical procedures. The maximum number of subjects with NCDs [n=157 (28.1%)] were observed in the age category of 50-59 years. Among 559 readmitted NCD cases, 306 (54.7%) were males while 253 (46.3%) were females, (male: female=1.5:1). The married subjects were 540 (96.6%) while unmarried/divorced/widow/single being 19 (3.4%).

Of 559 primary NCD readmissions, 236 (42.22%) readmissions were having one NCD, 63 (11.27%) readmissions exhibited multiple chronic conditions (MCC) (having two or more NCDs) while 260 (46.51%) were readmitted because of CA. Of 236 single NCD readmissions, CVD/IHD readmissions were the most frequent (n=99, 41.94%) while among MCC (n=63) readmissions, DM+HTN were the most frequent (n=28, 44.44%). The disease specific readmissions are shown in Figure-2.

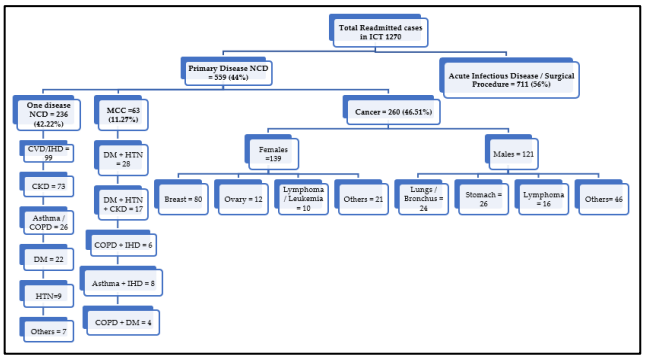

Figure-2: Diagnosis-wise breakdown of readmissions in SSP Islamabad district, Pakistan.

On further breakdown of readmitted CA cases, it was found that among females (n=139, 53.5%), 80 (56.3%) had carcinoma breast while among males (n= 121, 46.5%) the most common malignancy was CA lungs and bronchus (n=24, 19.8%). The demographic details and gender-based disease (cancers) stratification is described in the Table.

Table: Gender based demographic characteristics of patients among readmitted cases in Sehat Sahulat programme (n=559).

Age Categories	Males (n=306)	Females (n=253)	Readmitted Cases (n=559)	*p*-value
<40	47 (15.4)	33 (13.0)	80 (14.3)	
40-49	80 (26.1)	73 (28.9)	153 (27.4)	
50-59	82 (26.7)	75 (29.6)	157 (28.1)	0.757
60-69	86 (28.2)	65 (25.7)	151 (27)	
≥70	11 (3.6)	7 (2.8)	18 (3.2)	
Marital Status (n=559)				
Status	Males (n=291)	Females (n=264)	Readmitted Cases	
Married	287 (98.6)	249 (94.3)	540 (96.6)	0.035
Others (Unmarried, Single, divorced)	4 (1.4)	15 (5.7)	19 (3.4)	
Gender based single disease stratification (n=236)				
Disease	**Males (n=156)**	**Females (n=80)**	**Total cases (n=236)**	
CVD/IHD	70 (44.8)	29 (36.2)	99 (41.9)	
CKD	53 (33.9)	20 (25)	73 (30.9)	
Asthma/COPD	12 (7.7)	14 (17.5)	26 (11)	<0.001
DM	12 (7.7)	10 (12.5)	22 (9.5)	
HTN	5 (3.2)	4 (5)	9 (3.8)	
Others	4 (2.7)	3 (3.8)	7 (2.9)	
Gender Based MCC Stratification (n=63)				
Multiple Chronic Conditions	Males	Females	Total Cases	
	44 (69.8)	19 (30.2)	63 (100)	
Gender Based Cancer Stratification (n=260)				
Condition	Males	Females	Total Cases	
Ca Breast	-	80 (57.5)	80 (30.7)	
Ca Stomach	26 (21.5)	6 (4.3)	32 (12.4)	
Lymphomas / Leukemia	16 (13.2)	10 (7.2)	26 (10)	
Ca Bronchus /Lungs	24 (19.8)	2 (1.4)	26 (10)	<0.001
Ca Rectum/ Colon	9 (7.5)	8 (5.8)	17 (6.5)	
Ca Ovary	-	12 (8.6)	12 (4.6)	
Others	46 (38)	21 (15.2)	67 (25.8)	

DISCUSSION

Readmissions are always costly and situation is exacerbated by the type of NCDs or co-existence of MCC. The long-term survival also gets worsened in these situations. It is always important to reduce rates of readmissions as they lead to compromised care with poorer clinical outcomes.[12-16]

Our results inform policies that are directed towards achieving the dua l aims of Universal Health Coverage (UHC) for Pakistan, i.e. ensuring access to the requisite health care of sufficient quality and preventing vulnerable households from incurring catastrophic health expenditure.

SSP has been completely harmonized with United Nations post-MDG agenda and Pakistan National vision 2025 with the prime focus on the UHC.[17] SSP has gathered much data since the inception of the programme in late 2015. This study aims to further strengthen such social protection programs with robust evidence informed filling in the gaps to reach the marginalized population who truly deserve to be benefitted by SSP by identifying the most common diseases for readmissions.

In Pakistan, where 29.9% population is living below poverty line, this program acts as a revolutionary step towards social welfare reforms.[5] At the time of the analysis, the program was covering 3.2 million families in 38 districts with the target to reach up to 11 million families across Pakistan.[18] The medical services provided by this program include in-patient and emergency treatment for secondary care, maternity services including deliveries, antenatal checkups and advice for family planning, immunization and nutrition. Keeping in view the increasing drift of NCDs affecting the impoverished and vulnerable in Pakistan, these diseases are also included in the list as priority treatments.[1]

It has been observed that the readmission rates are increasing in certain regions of country such as Rahim Yar Khan (RYK) and ICT. Data revealed that ICT is one of the high readmission's districts i.e., n=1270 30-days readmissions.

According to World Health organization (WHO), NCDs accounts for 41 million people each year, globally. Over 85% of all premature deaths in adults aged 30-69 years occur in developing countries including Pakistan.[21] Increasing prevalence of chronic disease which is directly related to rising healthcare expenditures, work-force complications regarding attendance and productivity, military personnel recruitment, and academic success.[22] NCDs do not always lead to full recovery which is why these diseases have high rates of morbidities. The patients have to adhere to long-term treatment protocols to effectively manage disease or have to undergo repeated hospital admissions in case of complications[23]. As a result, NCDs put a substantial economic burden not only on families but also on national healthcare budget. The cost of treatment is expected to rise over time due to chronic nature of disease.[24] The problem of hospital readmissions is more for patients who are above 65 years old and have one or more chronic diseases coupled with a low socio-economic background in juxtaposition with rural residence.[25] However, no such conclusion can be drawn from our data as all the population was marginalized. Other basic demographics like education, residence, occupation etc were not available, which is a major limitation of using secondary data in a developing country where vigorous record keeping is in primitive stages. Readmission rate of CVD/IHD was 99 (19%) among the primary disease NCD in this study, comparable to Myanamar (21.9%).[20]

In a study in US population, ninety day readmission rates ranged from 23-43% after a major cancer surgery, on the basis of type of tumor[16]. These rates are comparable to our study (46.51%). In a study in Myanmar, common cancer readmissions were due to colorectal (13.1%), breast (13%), and lung (11%) cancers. In our study, CA stomach (32, 12.3%) followed by CA lung/bronchus (26, 10%) and lymphomas (26, 10%). In US, patients hospitalized for COPD have a 30-day readmission rate of 22.6% compared to only 5% in our studymost likely due to our study results being from a single city. In high-income countries, 16-57% of adults harbor more than one chronic condition at one point in time. Developing countries are also showing increasing trend of MCC. On analysis, these rates in our study are comparable (8.3-42%) which shows trend of MCC is increasing in Islamabad. Interestingly, in our study, males with MCC were readmitted more than females. The difference may be due to socio-cultural and equitable reasons as females' health is undervalued so less likely to be highlighted for medical care.

Providing affordable treatment, strengthening the capability of health systems and supporting the prevention and management of HTN and diabetes are also relevant in this respect.[24]

To the best of our knowledge, this is the first ever situation analysis carried out in the region assessing readmission rates of NCDs.

LIMITATION OF STUDY

We were restricted to descriptive analysis because of limitations of the secondary data. The data visibly illustrates a dire need to explicitly indicate the reasons of readmissions along with determinants affecting readm issions while data collection.

CONCLUSION

NCDs represent a significant burden on resource poor, low-income countries like Pakistan, which are already struggling with providing adequate health coverage to the most

poverty-stricken segments of Pakistan's pop ulation. In view of the recurrent admissions that these chronic diseases inevitably incur, improved resource allocation may help alleviate this growing burden on our fragile health system resulting in better clinical outcomes.

ACKNOWLEDGEMENT

Authors acknowledges the contributions of Pakistan's Sehat Sahulat Program in conduct of this Study.

Conflict of Interest: None.

Authors' Contributions

SFM: Concept, data analysis, draft, SM: Data analysis, proof reading, AH: Concept, data analysis, draft, SM: Data collection, validation, SR: Data collection, validation, draft review, editing, AAM: Data collection, editing, FR: Validation, drafting, data review, SAK: Drfat editing, review and proof reading, AH: Supervision.

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