

The Impact of Socio-Economic Determinants on Dental Public Health and Oral Hygiene in Pakistan

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Abstract

Dental disparities and poor oral hygiene are an established problem of dental public health in the less developed countries. Pakistan is not an exception to this: socio-economic oral health disparities exist in Pakistan's society at a large scale. As Pakistan is a developing economy, it allocates funds far lesser than the international standard set by World Health Organization (WHO) of Gross Domestic Product (GDP) for health sector. A large part of population lives in low income category, which exacerbates the problem further. The present study focuses on discussing the GDP allocation to health sector in addition to figuring out the impact of socio-economic factors on oral hygiene. The sample was divided into two categories: high income group and low income group. Both primary and secondary data have been used; the data was collected using a scale of oral health. The analyzed data showed that people with low socio-economic status have low profile dental health. They visit the dentist only when they have a severe problem because they are either unaware of oral hygiene or don't pay heed to it.

Keywords: *Federal Budget socio-economic, determinants, oral health, dental disparities, oral hygiene*

Introduction

Dental Public Health (DPH) is that part in dentistry, which deals with the qualities of expertise and leadership, dentistry based on population, surveillance of the oral health, development of policy, prevention of diseases based on their communities, promotion of health, and maintaining the safety net of oral health. DPH has been defined in various aspects, from the art and science point of view about how the prevention and control of diseases can be done, and how to promote the oral health with the help of different systematic efforts. There is an attempt to increase the awareness among people regarding dental public health in the module, which focuses on the ways in which the dental health stakeholders can make efforts to enhance the infrastructure for helping the local, provincial and federal levels (Marisol, 2014). The advocacy institutes, foundations, professions regarding oral-health care, academia and dental association are the different types of these stakeholders. The inequalities in the oral health are with respect to the differences that happen at various steps of this process that

can be avoided and considered as unfair and unjust in the current society. According to a study that was held as a review of the linkage between the dental collapses in the elderly people and the economic and social characteristics showed that the evidence with respect to these social pitches was uniform in different indicators, which included the area-level of social and economic status, the social class, occupation, income and education (Scully, 2000).

The indicators related to the economics and social status e.g. income, awareness and education are factors that protect against poor dental health, and improve the access of the populations to the dental health services. There are many barriers that lessen the dental health care, these are low level of awareness regarding oral health, low income, poor education, restricted access to health services or underestimating the impact of oral health as compared to the overall health. The inequalities in income are the main reason behind dental health issues (Kaiser 2012). According to researches, the low income is the reason behind lack of chances to visits the dentist in the previous year. In the year 2010, it was recorded that the visits to the dentists per year were 42% and 70% in individuals above and below 200% of the federal poverty line (Manu *et al.*, 2010). There were no visits to the dentists recorded in the last five years for one fifth of the adults with low income (Manu *et al.*, 2010). The rate of visits to dentists is greatly affected by factors like low income, flexibility of time, transportation and insurance (Bethesda, 2000). Even after the oral health advancements, all the people have not experienced any equal improvement in their dental health (Scully, 2000). The social variables in the oral health and in general are almost the same, which indicate that there is a common pathway and set of influences (Shervin, 2007). The attitude of people in terms of seeking the dental care at regular basis is greatly affected by lack of awareness regarding the connection of

systemic health and oral health (Benjamin, 2010). Many people who visit the dentist regularly maybe the only interaction with a healthcare professional, which can be regarded and opportunity for assessing various pathologies, especially the ones that are concerning the mouth. Therefore, this study aims to identify the impact of GDP allocation on Public Health and to figure out how the socio economic determinants affect the oral hygiene.

Methodology

This research was divided in to two sections; primary and secondary data.. In order to determine the impact of GDP allocation on public health, secondary data (economic surveys, newspapers editorials, columns and research journals) was analyzed and discussed. To figure out the impact of socio-economic determinants on oral hygiene, indicators such as education, occupation and income were used to define socioeconomic position. (These indicators were used in many similar studies i.e. Australian Institute of Health & Welfare, Area-based Index of Relative Socio-economic Disadvantage and AIHW, Australian Bureau of Statistics, Manu R. in India). A random sample of 100 has been collected, i.e. 50 from high income group and 50 from low income group. To collect data, scale of oral health was used as reported earlier (Georgios, 2012).

Current Federal Budget and Public Health

WHO encourages and recommends the states which spend 6% of their GDP's on health for meeting the nations' targets. Pakistan, spending far lesser than this on the development in fields of education and health. The Economic Survey for the fiscal year (FY) 2017-18 showed that the federal and provincial governments allocated Rs. 384.57 billion for health sector, amounting to around 1.12 per cent of GDP of the

country. This was more than Rs.273.34 allocated in FY 2016-17 and 31.75 percent greater than the real expenses of Rs.291.9 billion that were made in the previous fiscal year. But until February, the Government had utilized less than half of the allocated sum of around Rs167.16 billion, or just 43.5 per cent of the allocated budget. Despite the increased allocation, the funds were far short of the World Health Organization (WHO) benchmark of allocating at least six per cent of the GDP for basic and lifesaving services. The survey showed that the overall numbers of the registered doctors in the country had increased marginally from 195,896 in 2016 to 208,007 in 2017. This means that there was one doctor available for 957 people in 2017, improving to a doctor for 997 people in 2016. This is still a far away from fulfilling the WHO recommended ratio of 4.4 doctors for 1,000 people. There are only 20,463 dentists in the country which mean a single dentist for 9,730 people. These resources are for the entire health sector out of which, the dental sector receives a small portion of resources (Shervin, 2018).

Health Expenditure

Fiscal Year	Total Health Expenditure	Health Expenditure as % of GDP
2008-09	73.80	0.56
2009-10	78.86	0.53
2010-11	42.09	0.23
2011-12	55.12	0.27
2012-13	125.96	0.56
2013-14	173.42	0.69
2014-15	199.32	0.73
2015-16	225.87	0.77
2016-17	291.90	0.91
2017-18	384.57	1.12

(Economic Survey 2017-18)

The above table shows the health expenditure as a percentage of GDP which was only 1.12% of the GDP. Out of this 1.12%, major chunk of health expenditure is usually consumed by medical side. It is clear from the above figures that dental public health receives a very small portion of the total allocated budget to health sector.

Moreover, another complaint that is commonly received from dentists and patients with low income is the inability of Government to provide dental benefits (Wallace & Macentee, 2012). Despite the fact that many individuals need to undergo the process of dental extraction, the public insurances do not have the coverage of any kind of prosthetic replacement. People normally keep the painful and damaged unless extraction is the only option that are left with for the purpose of improving their health, resulting in their becoming toothless, lack of self-confidence and not having the ability for paying any acceptable replacements (Reisine *et al.*, 2016). Therefore, for the purpose of compromising on the fee schedule and the range of the services that are covered, which also satisfies the patients' dental health and their other financial needs, it is necessary that dentists work with public insurance system (Tedesco, 1991).

Dental Public Health

After the 18th constitutional amendment in Constitution of Pakistan, health management has become a provincial subject. The country has four provinces in addition to Gilgit-Baltistan, AJK and FATA areas, but only Punjab Province has established separate dental public health department so far, which offers to assess the needs of the dental public health, aiming at providing a responsive, effective

and efficient dental health care that is accessible, affordable and approachable. The general branch of dentistry can provide their services in different areas like medication, extractions, root canal treatment, filling, dressing, scaling and examinations (Sanders *et al.*, 2006). Various community centers, colleges and schools are visited by the dental hygienist students and staff of Dental Public Health.

The department helps in providing preventive services in clinics and rural public community through various outreach programs (Costa, 2012).

Socio-Economic Determinants and Oral Hygiene

To determine the impact of socio-economic determinants on oral hygiene, data has been collected from the low income group and high income group.

Demographics of Pooled Sample

Age	Number	Sex	Number	Marital status	Number
18-30	37	Male	67	Married	72
31-50	36	Female	33	Single	28
≥ 51	27				
Total	100	Total	100	Total	100

The table above shows that in pooled sample 37% of sample is in age bracket of 18-30, whereas 36% are in 31-50 and 27% are aged 51 years or more. 67% of the respondents were male and 33% were female.

Model 1: Socio-Economic Determinants

Low Income Group:

Education	Number (%)	Income	Number (%)
≤10	12	≤10,000	04
11-12	19	11,000-20,000	22
Bachelors	17	21,000-30,000	19
Masters	02		
Ph.D.	0		
Total	50	Total	50

High Income Group:

Education	Number (%)	Income	Number (%)
≤10	0	50,000-60,000	28
11-12	0	61,000-70,000	12
Bachelors	28	≥70,00	10
Masters	17		
Ph.D.	5		
Total	50	Total	50

Model 2: Oral Hygiene**Low Income Group:**

Oral health indicators		N (%)	Mean (SD)	P
Toothache (current)	Yes	29(58)	2.31 (2.54)	0.001
	No	21(42)	1.16 (1.78)	
Toothache (experience)*	Yes	39(78)	2.19 (2.52)	0.001
	No	11(22)	0.76 (1.37)	
Satisfaction with oral health	Yes	15(30)	1.93 (2.34)	0.037
	No	35(70)	1.30 (1.01)	
Reported cavities*	Yes	43(86)	1.82 (1.91)	0.032
	No	07(14)	1.17 (2.22)	
Caries	Yes	31(62)	1.59 (2.09)	0.022
	No	19(38)	1.37 (2.06)	
Pulp involvement	Yes	27(54)	1.67 (1.51)	0.010
	No	23(46)	1.23 (2.03)	
Dental sepsis	Yes	31(62)	3.46 (4.11)	0.005
	No	19(38)	1.32 (1.87)	
Poor oral health **	Yes	44(88)	1.75 (2.19)	0.001
	No	06(12)	0.75(1.45)	

High Income Group:

Oral health indicators		N (%)	Mean (SD)	P
Toothache (current)	Yes	12(24)	1.31 (1.54)	0.001
	No	38(76)	2.16 (2.58)	
Toothache (experience)*	Yes	29(58)	1.19 (1.42)	0.001
	No	21(42)	2.76 (2.37)	
Satisfaction with oral health	Low	35(70)	0.83 (1.34)	0.037
	High	15(30)	1.40 (2.01)	
Reported cavities*	Yes	23(46)	1.12 (2.91)	0.032
	No	27(27)	1.77 (1.22)	
Dental Caries	Yes	11(22)	1.39 (2.19)	0.022
	No	39(78)	1.73 (2.05)	
Pulp involvement	Yes	17(34)	1.17 (1.61)	0.010
	No	33(66)	1.27 (2.13)	
Dental sepsis	Yes	12(24)	1.46 (3.11)	0.005
	No	38(76)	3.22 (1.97)	
Poor oral health **	Yes	13(26)	0.75 (2.29)	0.001
	No	37(54)	1.75(1.35)	

The two step analysis of data using chi-square showed that in low income group 58% of the correspondents with were suffering from Toothache (current) with as compared to 24% in the high income group. The toothache (experience) by low income group was 78% (mean 2.19 and SD 252) and 58% (M 2.76 SD 2.37) in high income group. Similarly 70% of the high income groups are satisfied with their dental health and only 30% were satisfied among low income strata. The data further showed that 86% of the correspondents in low income reported cavities as compared to 46% in high income people. The ratio of dental carries in 62% to 22 % between low income and high income sample. 54% of the low income reported pulp involvement as compared to 36% in high income. 24 % in high income reported to have dental sepsis where as in low income this percentage was 62. Finally when they were asked about poor dental health 88% among low income group affirmed poor oral health whereas only 26% in high income group claimed to have poor oral health. All the variables were significant having p value less than 0.05.

Results

Findings of Model 1

The data collected showed that in low income group, 12% have attained education up to 10th standard, whereas 19% received education up to 12th standard and 17% were fortunate to get education till bachelors and only 2% reached to Master level. The situation of high income group is totally different, where 28% got education up to Bachelor level, 17% to Master level and 5% to Ph.D. level. In the low income group, 4% earn up to Rs. 10,000, 22% up to 22,000 and 19% up to

30,000. In high income group, 28% earn up to Rs. 60,000, 12% up to 70,000 and 10% earn more than 70,000 a month.

Findings of Model 2

When there is an insufficient access to the services that can prevent the dental issues, it actually increases the risk of decreased oral health of the low income population. The rate of untreated caries among poor families continues to increase, because the equipment and technology are an essential part of the dental treatments, and they are actually very expensive. In addition to the infectious diseases, the long lasting diseases that are non-communicable, such as the dental decay can wreak havoc in the populations who are disadvantaged in terms of the access to the services of oral health. The only treatment that is accessible to this vast population is the dental extraction, because comparatively it is less expensive. It is more appealing to people of the strata of lower social and economic status, since they do not have the facility of visiting the dentist at all. In such kind of situation, the person is sometimes compelled to delay the treatment for as long as he can continue without it, due to which the situation worsens and the only alternative left is the dental extraction.

Suggestions

It has been recommended that:

- The budgetary allocation for dental public health should be enhanced.
- Establishment of provincial dental public health infrastructure and departments.
- Use of technology and distance communication applications.
- Coordination linkages between public and private practices.

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