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Constellation of Factors for Non-Compliance with Non-Pharmacological Advices to Percutaneous Coronary Intervention Patients

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Abstract This study was an attempt to find out the constellation of factors interplaying for non-compliance with non-pharmacological advices to percutaneous coronary intervention patients attending Combined Military Hospital Dhaka, Bangladesh. This was a qualitative, obtrusive (reactive), descriptive socio-medical research using face to face in-depth interview with conveniently selected eighty-two 'peer reviewed' samples of percutaneous coronary intervention patients. Data were analyzed using limited descriptive statistics as well as Rothman's concept of causal constellation, which were interpreted through both etic and emic approaches to draw conclusion. All ethical issues including avoiding plagiarism have been taken care of. The findings of the study show that necessary factors responsible for non-compliance of non-pharmacological management advices making web of constellation were 'lack of self-control', 'addiction', 'ignorance', 'laziness', 'health problem', and 'time constrain work'. The study concluded with the suggestions for strengthening health literacy among percutaneous coronary intervention patients in Combined Military Hospital Dhaka. The study hinted for further probing of constellation factors among such patients in general population.

Keywords Non-compliance, Non-pharmacological advice, Percutaneous coronary intervention patient

1. Introduction

Evolution of life in earth, not just a geologic second ago, led to the appearance of human life. Each human follows a life course which ends with death [1]. Death is preceded by certain diseases that have two types of dimensions: communicable disease and non-communicable disease (NCD). Non-communicable diseases currently cause more deaths than all other causes combined, and NCD deaths are projected to increase from 38 million in 2012 to 52 million by 2030 [2]. Death of a human being before age of seventy years is considered as premature [3]. At present there appears an unprecedented opportunity to alter the course of NCDs which can prevent the majority of premature deaths. One pattern of NCD is coronary artery disease (CAD), which is one of the leading causes of mortality and morbidity in developed world, as well as developing countries like Bangladesh [4]. Moreover, it continues to be a major public health problem. Treatment of CAD is essential and coronary artery bypass grafting (CABG) was the only alternative to pharmacotherapy for the treatment of CAD till 1977. After that gradually, another modality of treatment, that is, percutaneous coronary intervention (PCI) has surpassed CABG as the most common means for treating CAD because of improvement of materials used, the use of stents, and pharmacotherapy. Percutaneous coronary intervention is safe due to reduced radiation exposure, quick mobilization of patient and no procedural complication [5]. Persons having established CAD and undergone PCI are already at very high risk of development of further events of cardiovascular disease (CVD) and need compliance with life-long follow-up of medical advices. Patients' compliance to medical advices is crucial for better prognosis, which involves many factors, and makes it difficult to comply life-long. The post-PCI management of CAD patients involves both pharmacological (i.e., medicines) and non-pharmacological (i.e., lifestyle advices) management for restoration of normal functional coronary artery and/ or treatment of co-morbid medical condition(s) [6]. The estimations of World Health Organization (WHO) indicate that in developed countries compliance to long term medical advices for NCDs in the general population is around 50.0 percent, which is much lower in developing countries [7]. This study aims to look into the constellation of factors and find out the necessary causes that influence non-compliance with

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non-pharmacological management advices after discharge among PCI patients attending Combined Military Hospital (CMH) Dhaka, Bangladesh.

1.1. Research Theme

Just as statistical significance establishes causal relationship in quantitative studies, Rothman's causal constellation pies point to causal association in qualitative studies [8]. Compliance of treatment follow-up, where many different component causes have been identified for each of its types in relation to 'universal variables', this study delved into identification of a final common pathway representing a web of causation comprising of only necessary causes for non-compliance with non-pharmacological management advices.

2. Methods and Materials

The study was approved by the Ethical Committee of the Armed Forces Medical Institute, Dhaka, Bangladesh. The purpose of the research was explained to participants, who thereafter gave verbal informed consent.

This qualitative obtrusive (reactive) descriptive socio-medical study was conducted in the naturalistic setting of CMH Dhaka. The study population were patients with PCI who attended CMH Dhaka for follow-up advice. No specific time interval between follow-up advice and interview was considered. Convenient variety of non-probability sampling technique was applied during January and February 2016 to pick up total 82 sample units, which was agreed on peer review and considering data collection time in hand, PCI patients flow per day, and the time allocated for each interview through 'grand tour neutral probing'. Coherent PCI patients aged 18 years or more of both sexes were included. Those, not entitled to get treatment from CMH Dhaka, denying consent, or unable to communicate were excluded. Interviews were continued until content saturation was reached, or no new themes emerged. Some interviews were audio-taped and transcribed to facilitate analysis.

3. Result

Sex and Age Distribution of PCI Patients

The study revealed that out of total eighty-two PCI patients 92.7 percent of the patients were male and the rest 7.3 percent were female as shown in Illustration 1.

It was found that majority 35.4 percent of PCI patients were in the age group of 50 – 60 years and next 32.9 percent were in the age group of 60 – 70 years. Some 23.2 percent patients were in the age group of 40 – 50 years and the remaining 4.9 and 3.7 percent were in two extreme age group of 70 years or above and 30 – 40 years respectively, as shown in Table 1. The mean age of the patients were 55.6 years, median and mode being 56 and 65 years respectively. The age of the patients ranged between 31 and 74 years. The standard deviation (SD) was ± 9.4.

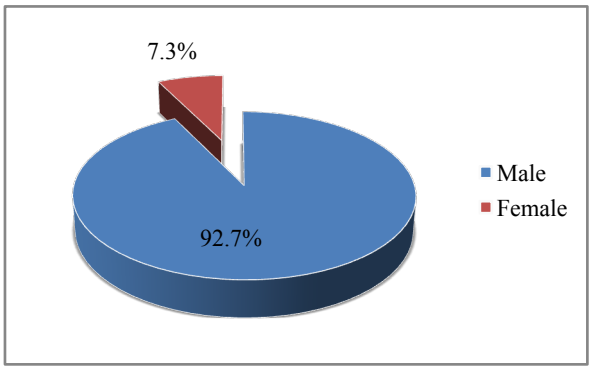

Illustration 1. Pie Chart Showing sex Distribution of PCI Patients

Table 1. Age Distribution of PCI Patients

Age group (in complete year)	f	%
30 - 40	3	3.7
40 - 50	19	23.2
50 - 60	29	35.4
60 - 70	27	32.9
≥ 70	4	4.9
Total	**82**	**100.0**

Mean = 55.6 years, Median = 56 years, Mode = 65 years,
SD = ± 9.4, Range = 31 – 74

Non-Pharmacological Management Advice

Non-pharmacological management advices prescribed by the physician to the individual PCI patient are considered here as lifestyle modification advice that need to be followed for the rest of life to prevent further consequences.

Table 2. Distribution of Lifestyle Modification Advices to PCI Patients*

Advice	F	%
Avoid tobacco use	76	92.7
Avoid physical inactivity	72	87.8
Avoid unhealthy diet	60	73.2
Avoid harmful use of alcohol	5	6.1
Regular follow-up	15	18.3

*Multiple responses

Table 2 shows that majority 92.7 percent PCI patients were advised with 'avoid tobacco use', followed by 87.8 and 73.2 percent advised with 'avoid physical inactivity', and 'avoid unhealthy diet' respectively. Some 18.3 percent patients were advised with 'regular follow-up', and the least 6.1 percent patients were advised with 'avoid harmful use of alcohol'.

Non-Compliance with Non-Pharmacological Management Advice

Non-compliance of non-pharmacological management advices by individual PCI patients are depicted here as coding for the concerned data generated by in-depth interview. The list has eleven codes and presented as factors for non-compliance of non-pharmacological advices.

The study revealed that majority 28.0 percent PCI patients disclosed non-compliance with non-pharmacological advices because of 'lack of self-control', followed by 24.3 percent of non-compliance due to 'health problem'. Some 14.6 percent PCI patients divulged non-compliance owing to each factor, either 'time constrain work' or 'laziness'. 'Ignorance' was responsible for 13.4 percent of non-compliance. Some 2.4 percent non-compliance was found responsible for each factor, either 'perceived wellbeing' or 'far-flung from CMH' or 'lack of environmental support'. 'Addiction', and 'lack of family support' were separately responsible for 4.8 percent of non-compliance, and a few 1.2 percent of non-compliance was responsible for 'loss of memory' as depicted in table 3.

Table 3. Distribution of Factors for Non-compliance with Non-pharmacological Management Advice by PCI Patients*

Factor	f	%
Ignorance	11	13.4
Lack of self-control	23	28.0
Health problem	20	24.3
Time constrain work	12	14.6
Laziness	12	14.6
Perceived wellbeing	2	2.4
Addiction	4	4.8
Far-flung from CMH	2	2.4
Lack of family support	4	4.8
Loss of memory	1	1.2
Lack of environmental support	2	2.4

*Multiple responses

Constellation of Factors for Non-Compliance with Non-Pharmacological Management Advices

Illustration 2 shows sufficient cause for non-compliance with non-pharmacological management among male PCI patients that comprises of 'perceived wellbeing', 'time constrain work', 'ignorance', 'lack of self-control', 'health problem', 'laziness', 'addiction', 'far-flung from CMH', 'lack of family support', and 'lack of environmental support'. Each of these factors is component of sufficient cause. In female PCI patients, components of sufficient cause are 'time constrain work', 'ignorance', 'lack of self-control', 'health problem', and 'addiction'. Irrespective of sex, 'time constrain work', 'ignorance', 'lack of self-control', 'health problem', and 'addiction' are the necessary cause for non-compliance with non-pharmacological management among PCI patients.

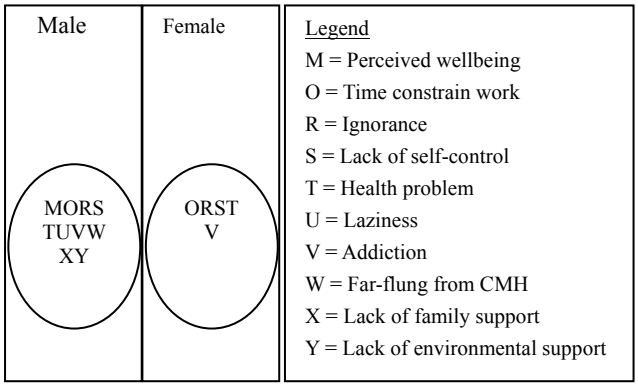

Illustration 2. Rothman's Causal Pies Showing Constellation of Factors for Non-compliance with Non- pharmacological Management Advice by Sex

Illustration 3 shows the components of sufficient cause for non-compliance with non-pharmacological management advices among different age groups. It is found that irrespective of age groups, no necessary factor is responsible for non-compliance with non-pharmacological management advices among PCI patients.

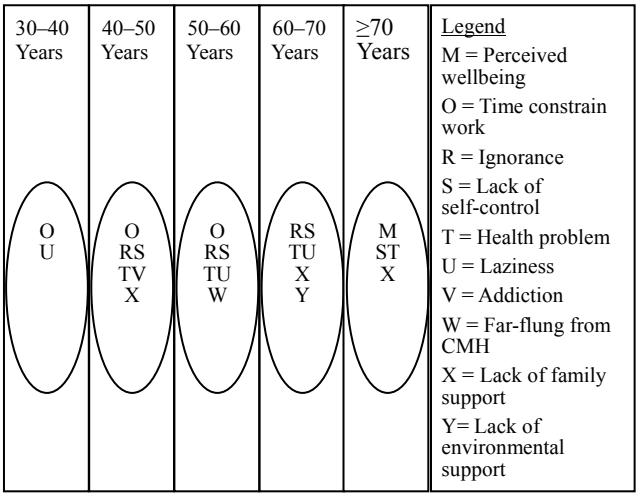

Illustration 3. Rothman's Causal Pies Showing Constellation of Factors for Non-compliance of Non- pharmacological Management Advice by Age

Illustration 4 shows the components of sufficient cause for non-compliance with non-pharmacological management advices among different educational qualification groups. It is found that irrespective of educational qualification, 'lack of self-control', 'health problem', and 'laziness' are the necessary causes for non-compliance with non-pharmacological management advices among PCI patients.

Illustration 5 shows components of sufficient cause for non-compliance with non-pharmacological management advice in different occupation groups among PCI patients. It is revealed from the study that irrespective of occupation groups, 'health problem' is the necessary cause for

non-compliance with non-pharmacological management advice among PCI patients.

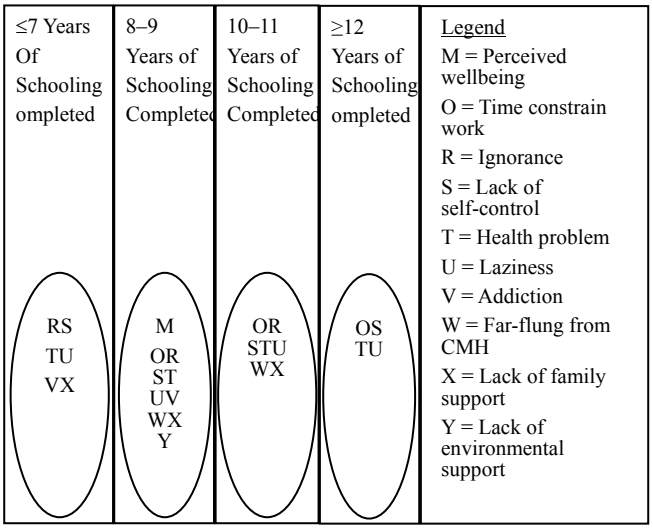

Illustration 4. Rothman's Causal Pies Showing Constellation of Factors for Non-compliance with Non-pharmacological Management Advice by Educational Qualification

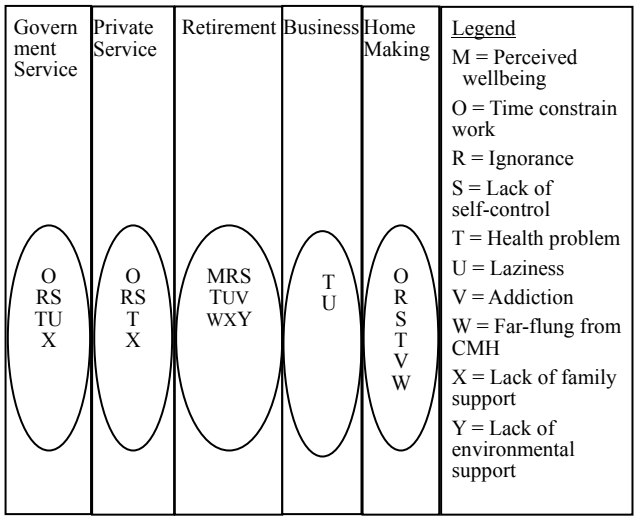

Illustration 5. Rothman's Causal Pies Showing Constellation of Factors for Non-compliance with Non-pharmacological Management Advice by Occupation

The study reveals that irrespective of marital status among PCI patients, no necessary component of sufficient cause for non-compliance with non-pharmacological management advice is present, as shown in illustration 6.

Illustration 7 shows components of sufficient cause for non-compliance with non-pharmacological management advices in different monthly income groups. It is revealed from the study that irrespective of monthly income groups 'lack of self-control' and 'laziness' are the necessary causes for non-compliance with non-pharmacological management advice among PCI patients.

Necessary causes, which are the common components of every sufficient cause, were picked-up from each selected above-mentioned 'universal variable' irrespective of their own sub-groups, and shown in spider-web diagrams in illustration 8. Among all the PCI patients, the necessary causes for non-compliance were non-pharmacological management were 'health problem', 'ignorance', 'time constrain work' 'lack of self-control', 'addiction', and 'laziness'.

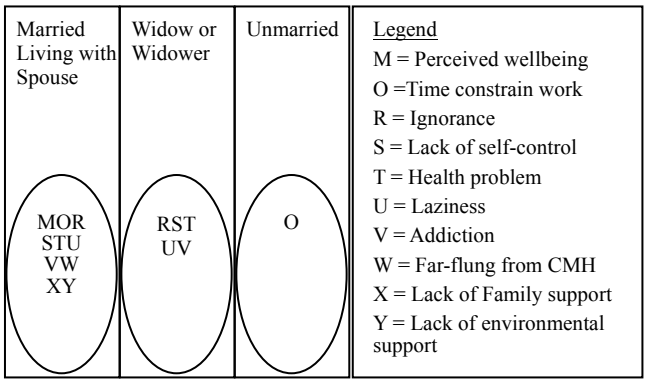

Illustration 6. Rothman's Causal Pies Showing Constellation of Factors for Non-compliance of Non-pharmacological Management Advice by Marital Status

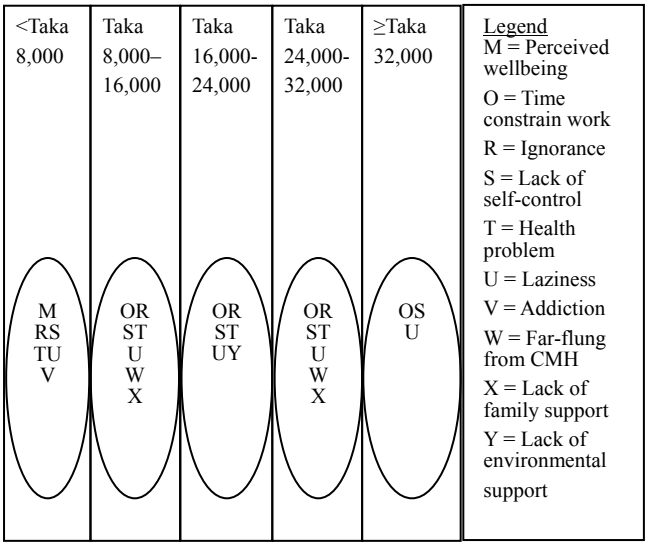

Illustration 7. Rothman's Causal Pies Showing Constellation of Factors for Non-compliance with Non-pharmacological Management Advice by Monthly Income

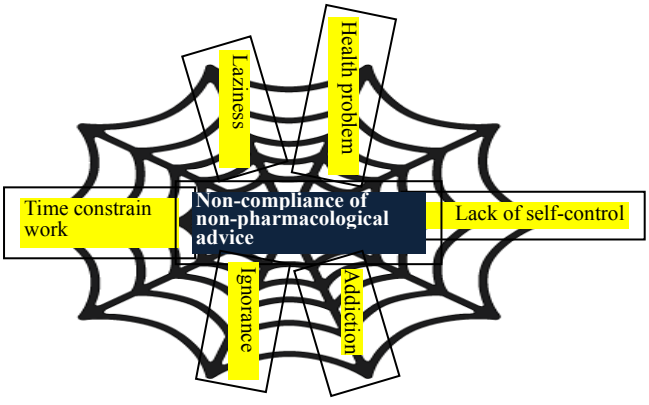

Illustration 8. Spider-Web Diagram Showing Web of Causation for Non-compliance of non-pharmacological Management Advice

4. Discussions

Collectively the necessary causes form the constellation of cause for the outcome of compliance. Among all the PCI patients, 'health problem', 'ignorance', 'time constrain work' 'lack of self-control', 'addiction', and 'laziness' emerged as constellation of cause for non-compliance with non-pharmacological management advices. In short, the constellation factors for non-compliance with non-pharmacological management advices are the outcome of both nature and nurture components of bio-psycho-social environment [9]. Probably, cohesively these factors interact in a synergistic way for non-compliance. To adhere with non-pharmacological management, programs of health literacy intervention maybe instituted among PCI patients and their associates in CMH Dhaka.

5. Conclusions

The treatment compliance of percutaneous coronary intervention patients is the outcome of bio-psycho-social phenomena. The phenomena were analyzed using Rothman's causal pies concept. Constellation of factors for non-compliance to non-pharmacological management advices among percutaneous coronary intervention management are 'ignorance', 'time constrain work', 'lack of self-control', 'addiction', 'laziness', and 'health problem'. Recommendations suggested from this study:

- To minimize the problem of non-compliance, appropriate efforts are required in the form of motivational counseling campaign or health educational program for the percutaneous coronary intervention patients in Combined Military Hospital Dhaka for reinforcing the compliance with medical management.
- Further studies are required among percutaneous coronary intervention patients in general population of Bangladesh for better understanding of compliance with follow-up advices in respect of their social anatomy and concomitant medication use.

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