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Level of Satisfaction Determines the Attitude towards Treatment among Patients with Selected Life-Style Diseases Attending Outpatient Department – Experience from a Pilot Study in a Tertiary Care Hospital

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ABSTRACT

Background: *Adherence and positive attitude to treatment is greatly important for non-communicable diseases (NCDs). Satisfaction towards out-patient department (OPD) services influences the attitude towards treatment and therefore adherence. But there is a paucity of studies supporting this fact in Indian context. Satisfaction and adherence to treatment in Indian perspective are needed to be measured keeping in mind the socio-cultural background. With this back-drop the objective of the study was to find out the epidemiological determinants of satisfaction regarding OPD services and attitude regarding treatment; also to identify the relationship among the socio-demographic, clinical factors & level of satisfaction from OPD services and attitude regarding treatment.*

Methodology: *Patients with selected NCDs attending the General Medicine OPD at Medical College, Kolkata who gave consent were selected by systematic random sampling. Exit interview was done with a pre-designed pre-tested semi-structured schedule.*

Results: *46 participants were interviewed. Majority were male, hindu, with lower level of socio-economic status (SES) (modified B G Prasad Scale). Hypertension and diabetes mellitus were identified as the major diagnoses with many participants suffering from more than one NCDs. Majority of the participants were overall satisfied with OPD services, showed overall positive attitude towards treatment and their relationship was statistically significant. Area of residence was significantly related to attitude towards visit adherence.*

Conclusion: *Statistically significant relationship was observed between overall level of satisfaction &overall attitude regarding treatment. This suggested that in order to increase adherence to treatment in general and adherence to medication, which is vital for control of NCDs, satisfaction of patients from OPD services should not be undermined.*

Keywords: *1. Non-communicable diseases, 2. Patient Satisfaction, 3. Attitude towards treatment, 4. Treatment adherence.*

BACKGROUND

The life-style related diseases (non-communicable diseases) are now considered as a global epidemic with major incidences in the developed world, while a growing burden is noted year after another in the developing part of the world like in India.[1] As per WHO 1 in every 4 Indian risks dying from a non-communicable disease. [2] These diseases require long-term often life-long treatment in form of drugs, changes in the life-style, dietary modifications and more importantly regular follow-ups. Majority of these patients attend Hospital out-patient departments (OPDs) for their treatment. For chronic diseases, the patients' attitude regarding the different aspects of treatment is also important. A study conducted in Nigeria by Ogunfowakan and Mora [3] identified patients' expectations and satisfaction at the hospital clinics to be an important predictor for treatment-seeking behavior. Mohd A. and Chakravarty A. [4] identified several potential areas for patient satisfaction like good behavior of the staffs, short waiting time, cleanliness of the OPD set up etc. They also suggested that satisfaction improves the treatment outcome. Zeller et al. [5] emphasized on the utility of assessing attitude of the patients regarding treatment especially among those with NCDs.

In developing country like India, patient satisfaction and attitude regarding treatment need to be given more emphasis in order to provide quality healthcare particularly in cases of these chronic diseases. It is conceptualized that patients' satisfaction on availing OPD services and attitude towards treatment will be affected on socio-demographic and clinical interactions. We can also conceptualize that attitude towards treatment itself will depend on the satisfaction level regarding the healthcare services. This study was a pilot study carried out to assess the level of satisfaction and the attitude towards treatment among the follow-up patients with selected NCDs attending the general medicine OPD & to find out any associations.

METHODOLOGY

A cross-sectional descriptive pilot study was carried out at the General Medicine OPD of Medical College & Hospital, Kolkata applying systematic random sampling method. The study was conducted over 2 months period of which data collection was done on 1 week (i.e 6 OPD days) during the scheduled OPD hours.

Patients who gave consent and diagnosed with at least one of the life style diseases like hypertension, diabetes mellitus, COPD & arthritis were included. However patients attended the mentioned OPD for the first time and/or had acute presentations and/or cancers along with the selected diseases were excluded from the study. Taking prevalence 56.52% in Medicine OPD (Source: Medical Records Section), allowable relative error 20%, with significance level 5%, the estimated sample size was 46.Approximately 119 follow-up patients attended the OPD per day (Source: Medical Records Section). After the relevant calculations the first patient was randomly selected from first 14 with the selected criteria and then every 15th patient was selected.

Pre-designed pre-tested semi-structured schedule with questions related to satisfaction and attitude towards treatment structured in the form of a 3-point likert scale was developed based on several in-depth interviews and focused group discussions with respect to the study topic among the patients and structured on the basis of several similar tools like Patient Satisfaction Questionnaire III (PSQ-III)[6], DAI[7] and Morisky Patient Adherence Scale[8].Background data on socio-demographic and clinical profile was also taken from the participants. The schedule was translated into vernacular and was back translated by two different experts. Validity and reliability was established by doing appropriate statistical tests. Exit interview was performed by the principal investigator on the selected patients with the help of the vernacular version of the schedule.

Data was compiled and analyzed with the help of EpiInfo 7 and 'R' (version 3.2) software packages. Percentages & odds ratio were used for statistical

representation of the data. Variables dichotomized as per the operational definitions below. The pooled scores were obtained on the basis of weightage analysis (by inverse of variance method) &item-specific scores for variables.

Satisfied	A pooled score of > 0 in case of the variables related to patient satisfaction
Not Satisfied	A pooled score of ≤ 0 in case of the variables related to patient satisfaction
Positive Attitude	A pooled score of > 0 in case of the variables related to attitude regarding treatment
Negative Attitude	A pooled score of ≤ 0 in case of the variables related to attitude regarding treatment
Higher Socio-economic Status	Classes I, II and III as per the Modified B. G. Prasad scale[9]for socio-economic status
Lower Socio-economic Status	Classes IV and V as per the Modified B. G. Prasad scale for socio-economic status
Urban (Area of Residence)	Patients with area of residence 'Corporation' and 'Municipality' areas considered together
Rural (Area of Residence)	Patients residing in 'Panchayat' areas
Sedentary Worker	Those who do not perform physically strenuous work, performs majority work at home etc.
Non-Sedentary Worker	Those who perform physically strenuous work, like manual laborers, farmers, factory workers etc.

RESULTS

The mean age of the participants was 52.35 years with standard deviation (SD) 11.225 years (range: 24 – 75 years). Among the participants majority were male (60.9%), hindu (63.0%) resided in panchayat areas (45.7%) and were from nuclear families (52.2%). Equal proportion (23.9%) of study subjects were either educated up to middle school or were illiterate, 4.3% completed higher secondary level of education. Half of the study subjects were from Class IV socio-economic status as per modified B G Prasad Scale (modified October 2016). Almost 76.1% were sedentary workers. (TABLE 1)

Majority of the participants interviewed were diagnosed with hypertension (58.7%) followed by diabetes mellitus (52.2%). Among the participants majority were diagnosed with more than one NCD. (FIGURE 1).Though majority of the study subjects were satisfied with the attending physician (93.5%) but a major proportion was not satisfied with the associated health staffs (47.8%) and the amount of time and money spent for various reasons (80.4% each) while attending OPD. Majority of the study subjects felt exhausted after attending OPD (76.1%). Though 58.7% patients were not satisfied with the cleanliness at the OPD, 41.3% patients however were satisfied. As per the total pooled score; 78.3% of the study subjects were satisfied with the overall OPD services. (FIGURE 2). Majority of the study subjects had a positive attitude about visiting the OPD regularly (56.5%) and compliance towards medication advised (73.9%), however regarding life-style modification advises provided positive attitude was observed among 58.7%of the participants. On the other hand the participants predominantly had a negative attitude in performing investigations advised on-schedule (78.3%). On the basis of overall pooled score majority of the study subjects showed an overall positive attitude towards the treatment advised at OPD (87.0%). (FIGURE 3)

Overall level of satisfaction (satisfied/ not satisfied) was statistically significantly associated with overall attitude regarding treatment advised (OR 11.333; 95% CI of OR 1.684 – 76.259). Though not statistically significant but gender (male/female), religion (Hinduism/Islam), area of residence (urban/rural), socio-economic status (higher/lower), type of work (sedentary/non-sedentary); satisfaction with associated health staffs, cost, cleanliness all these documented an odds of more than one regarding overall attitude (positive/negative). (TABLE 2)

A rather protective odds was observed for area of residence (urban/rural) in relation to attitude regarding medication advised (OR 0.158, 95% CI of OR 0.030 – 0.832) and this was statistically significant. Joint family, absence of hypertension, absence of diabetes, having diagnosed with single NCD; overall satisfaction, satisfaction with attending physician, associated health staffs, cleanliness and exhaustion all documented a better odds for positive attitude towards medication

advised, but were not statistically significant. (TABLE 3)

Favorable and statistically significant attitude regarding regular visit to OPD was observed for religion (OR 4.074, 95% CI of OR 1.146 – 14.481) and area of residence (OR 4.179, 95% CI of OR 1.209 – 14.441). However, statistical significance was observed for satisfaction regarding cost to attitude regarding regular OPD visit with OR 0.155, 95% CI of OR 0.028 – 0.856. (TABLE 4)

Regarding attitude towards life-style modification advises none of the variables considered showed a statistically significant relationship. But higher age, male gender, urban residence, sedentary work, satisfaction with cost documented a better odds ratio. On the other hand Hinduism, joint family type, absence of hypertension, having diagnosed with only single NCD, satisfaction with associated health staffs, not getting exhausted after attending OPD documented an odds ration lesser than one.(TABLE 5). Age was statistically associated with attitude regarding performing investigation on schedule with a protective odds (OR 0.179, 95% CI of OR 0.033 – 0.963). None of the other factors considered had a statistically significant relationship with attitude regarding performing investigation on schedule. (TABLE 6)

TABLE 1.Distribution of study participants according to socio-demographic characteristics. (n=46)

Socio-demographic characteristics	Category/Group	Frequency (Percentage)
Age	≤ 30	1 (2.1%)
	31 – 40	8 (17.4%)
	41 – 50	13 (28.3%)
	51 – 60	13 (28.3%)
	≥ 61	11 (23.9%)
Sex	Male	28 (60.9%)
	Female	18 (39.1%)
Religion	Hinduism	29 (63.0%)
	Islam	17 (37.0%)
Level of Education	Illiterate	11 (23.9%)
	Just Literate	5 (10.9%)
	Below Primary	2 (4.3%)
	Primary	9 (19.6%)
	Middle	11 (23.9%)
	Secondary	6 (13.0%)
	HS	2 (4.3%)
Area of Residence	Panchayat	21 (45.7%)
	Municipality	12 (26.1%)
	Corporation	13 (28.3%)
Type of Family	Joint	22 (47.8%)
	Nuclear	24 (52.2%)
Type of Work	Sedentary Work	35 (76.1%)
	Non-sedentary Work	11 (23.9%)
Socio-economic status (As per B G Prasad Scale modified October 2016)[10]	Class I(≥6346)	0 (0.0%)
	Class II (3173 – 6345)	2 (4.3%)
	Class III (1904 – 3172)	12 (26.1%)
	Class IV (952 – 1903)	23 (50.0%)
	Class V (≤951)	9 (19.6%)

TABLE 2.Relationship of different socio-demographic and satisfaction variables to overall attitude regarding treatment. (n =46)

Factors	Variable Category	Overall Attitude Regarding Treatment		Total	Odds Ratio	95% CI of Odds Ratio	p Value
		Positive Attitude	Negative Attitude				
Age	Mean & Above	19	4	23	0.452	0.74 – 2.757	0.662
	Below Mean	21	2	23			
Gender	Male	25	3	28	1.667	0.297 – 9.341	0.891
	Female	15	3	18			
Religion	Hinduism	26	3	29	1.857	0.330 – 10.446	0.798
	Islam	14	3	17			
Area of Residence	Urban	22	3	25	1.222	0.219 – 6.807	1.000
	Rural	18	3	21			
Level of Education	< Middle School	22	5	27	0.244	0.026 – 2.286	0.384
	≥Middle School	18	1	19			
Family Type	Joint	19	3	22	0.905	0.163 – 5.035	1.000
	Nuclear	21	3	24			
SES	Higher SES	13	1	14	2.047	0.255 – 22.765	0.756
	Lower SES	27	5	32			
Type of Work	Sedentary	32	3	35	4.000	0.676 – 23.671	0.274
	Non-sedentary	8	3	11			
Hypertension	Absent	18	2	20	1.636	0.268 – 9.980	0.924
	Present	22	4	26			
Diabetes	Absent	19	3	22	0.905	0.163 – 5.035	1.000
	Present	21	3	24			
Number of chronic diseases present	Single disease diagnosed	28	4	32	1.167	0.188 – 7.252	1.000
	More than one disease diagnosed	12	2	14			
Overall Level of satisfaction	Satisfied	34	2	36	11.333	1.684 – 76.259	0.020
	Not Satisfied	6	4	10			
Satisfaction with attending physician	Satisfied	37	6	43	--	--	1.000
	Not Satisfied	3	0	3			
Satisfaction with associated health staffs	Satisfied	22	2	24	2.444	0.401 – 14.908	0.581
	Not Satisfied	18	4	22			
Satisfaction regarding Cost	Satisfied	8	1	9	1.250	0.128 – 12.252	1.000
	Not Satisfied	32	5	37			
Satisfaction regarding time spent	Satisfied	9	0	9	--	--	0.457
	Not Satisfied	31	6	37			
Exhaustion	Not exhausted	11	0	11	--	--	0.337
	Exhausted	29	6	35			
Satisfaction regarding Cleanliness	Satisfied	17	2	19	1.478	0.242 – 9.028	1.000
	Not Satisfied	23	4	27			

TABLE 3. Relationship of different socio-demographic and satisfaction variables to attitude regarding medication advised. (N=46)

Factors	Variable Category	Attitude Regarding Adherence To Medication Advised		Total	Odds Ratio	95% CI of Odds Ratio	p Value
		Positive Attitude	Negative Attitude				
Age	Mean & Above	16	7	23	0.635	0.168 – 2.402	0.737
	Below Mean	18	5	23			
Gender	Male	23	5	28	2.927	0.756 – 11.337	0.214
	Female	11	7	18			
Religion	Hinduism	23	6	29	2.091	0.547 – 7.989	0.459
	Islam	11	6	17			
Area of Residence	Urban	15	10	25	0.158	0.030 – 0.832	0.045
	Rural	19	2	21			
Level of Education	< Middle School	20	7	27	1.020	0.268 – 3.879	1.000
	≥Middle School	14	5	19			
Family Type	Joint	18	4	22	2.250	0.568 – 8.910	0.405
	Nuclear	16	8	24			
SES	Higher SES	10	4	14	0.833	0.204 – 3.409	1.000
	Lower SES	24	8	32			
Type of Work	Sedentary	26	9	35	1.083	0.235 – 4.994	1.000
	Non-sedentary	8	3	11			
Hypertension	Absent	17	3	20	3.000	0.690 – 13.040	0.245
	Present	17	9	26			
Diabetes	Absent	17	5	22	1.400	0.370 – 5.294	0.872
	Present	17	7	24			
Number of chronic diseases present	Single disease diagnosed	25	7	32	1.984	0.500 – 7.867	0.536
	More than one disease diagnosed	9	5	14			
Overall Level of satisfaction	Satisfied	28	8	36	2.333	0.526 – 10.346	0.468
	Not Satisfied	6	4	10			
Satisfaction with attending physician	Satisfied	32	11	43	1.455	0.120 – 17.654	1.000
	Not Satisfied	2	1	3			
Satisfaction with associated health staffs	Satisfied	20	4	24	2.857	0.718 – 11.368	0.237
	Not Satisfied	14	8	22			
Satisfaction regarding Cost	Satisfied	5	4	9	0.345	0.075 – 1.593	0.329
	Not Satisfied	29	8	37			
Satisfaction regarding time spent	Satisfied	9	0	9	--	--	0.118
	Not Satisfied	25	12	37			
Exhaustion	Not exhausted	9	2	11	1.800	0.329 – 9.840	0.771
	Exhausted	25	10	35			
Satisfaction regarding Cleanliness	Satisfied	15	4	19	1.579	0.398 – 6.263	0.756
	Not Satisfied	19	8	27			

TABLE 4.Relationship of different socio-demographic and satisfaction variables to attitude regarding regular visit to OPD. (N=46)

Factors	Variable Category	Attitude Regarding Regular Visit To OPD		Total	Odds Ratio	95% CI of Odds Ratio	p Value
		Positive Attitude	Negative Attitude				
Age	Mean & Above	14	9	23	1.426	0.442 – 4.598	0.766
	Below Mean	12	11	23			
Gender	Male	14	14	28	0.500	0.146 – 1.708	0.419
	Female	12	6	18			
Religion	Hinduism	20	9	29	4.074	1.146 – 14.481	0.055
	Islam	6	11	17			
Area of Residence	Urban	18	7	25	4.179	1.209 – 14.441	0.044
	Rural	8	13	21			
Level of Education	< Middle School	13	14	27	0.429	0.126 – 1.462	0.287
	≥Middle School	13	6	20			
Family Type	Joint	12	10	22	0.857	0.267 – 2.755	1.000
	Nuclear	14	10	24			
SES	Higher SES	9	5	14	1.588	0.435 – 5.799	0.704
	Lower SES	17	15	32			
Type of Work	Sedentary	22	13	35	2.962	0.725 – 12.092	0.231
	Non-sedentary	4	7	11			
Hypertension	Absent	11	9	20	0.896	0.277 – 2.903	1.000
	Present	15	11	26			
Diabetes	Absent	13	9	22	1.222	0.380 – 3.935	0.969
	Present	13	11	24			
Number of chronic diseases present	Single disease diagnosed	18	14	32	0.964	0.271 – 3.427	1.000
	More than one disease diagnosed	8	6	14			
Overall Level of satisfaction	Satisfied	20	16	36	0.833	0.200 – 3.467	1.000
	Not Satisfied	6	4	10			
Satisfaction with attending physician	Satisfied	23	20	43	--	--	0.333
	Not Satisfied	3	0	3			
Satisfaction with associated health staffs	Satisfied	14	10	24	1.167	0.363 – 3.749	1.000
	Not Satisfied	12	10	22			
Satisfaction regarding Cost	Satisfied	2	7	9	0.155	0.028 – 0.856	0.052
	Not Satisfied	24	13	37			
Satisfaction regarding time spent	Satisfied	6	3	9	1.700	0.368 – 7.845	0.757
	Not Satisfied	20	17	37			
Exhaustion	Not exhausted	7	4	11	1.474	0.365 – 5.958	0.844
	Exhausted	19	16	35			
Satisfaction regarding Cleanliness	Satisfied	10	9	19	0.764	0.234 – 2.494	0.885
	Not Satisfied	16	11	27			

TABLE 5. Relationship of different socio-demographic and satisfaction variables to attitude regarding life-style modification advises. (N=46)

Factors	Variable Category	Attitude Regarding Life-Style Modification Advises		Total	Odds Ratio	95% CI of Odds Ratio	p Value
		Positive Attitude	Negative Attitude				
Age	Mean & Above	14	9	23	1.197	0.369 – 3.875	1.000
	Below Mean	13	10	23			
Gender	Male	17	11	28	1.236	0.372 – 4.104	0.968
	Female	10	8	18			
Religion	Hinduism	16	13	29	0.671	0.195 – 2.308	0.746
	Islam	11	6	17			
Area of Residence	Urban	16	9	25	1.616	0.495 – 5.277	0.619
	Rural	11	10	21			
Level of Education	< Middle School	17	10	27	1.530	0.464 – 5.040	0.692
	≥Middle School	10	9	19			
Family Type	Joint	12	10	22	0.720	0.222 – 2.338	0.804
	Nuclear	15	9	24			
SES	Higher SES	8	6	14	0.912	0.256 – 3.255	1.000
	Lower SES	19	13	32			
Type of Work	Sedentary	21	14	35	1.250	0.319 – 4.899	1.000
	Non-sedentary	6	5	11			
Hypertension	Absent	9	11	20	0.364	0.108 – 1.222	0.176
	Present	18	8	26			
Diabetes	Absent	13	9	22	1.032	0.319 – 3.341	1.000
	Present	14	10	24			
Number of chronic diseases present	Single disease diagnosed	17	15	32	0.453	0.117 – 1.751	0.404
	More than one disease diagnosed	10	4	14			
Overall Level of satisfaction	Satisfied	21	15	36	0.933	0.224 – 3.893	1.000
	Not Satisfied	6	4	10			
Satisfaction with attending physician	Satisfied	27	26	43	--	--	0.126
	Not Satisfied	0	3	3			
Satisfaction with associated health staffs	Satisfied	12	12	24	0.467	0.140 – 1.553	0.341
	Not Satisfied	15	7	22			
Satisfaction regarding Cost	Satisfied	7	2	9	2.975	0.544 – 16.273	0.358
	Not Satisfied	20	17	37			
Satisfaction regarding time spent	Satisfied	5	4	9	0.852	0.196 – 3.705	1.000
	Not Satisfied	22	15	37			
Exhaustion	Not exhausted	5	6	11	0.492	0.125 – 1.939	0.502
	Exhausted	22	13	35			
Satisfaction regarding Cleanliness	Satisfied	11	8	19	0.945	0.287 – 3.111	1.000
	Not Satisfied	16	11	27			

TABLE 6. Relationship of different socio-demographic and satisfaction variables to attitude in the context of performing investigations on-schedule. (N=46)

Factors	Variable Category	Attitude In The Context Of Performing Investigations On-Schedule		Total	Odds Ratio	95% CI of Odds Ratio	p Value
		Positive Attitude	Negative Attitude				
Age	Mean & Above	2	21	23	0.179	0.033 – 0.963	0.074
	Below Mean	8	15	23			
Gender	Male	7	21	28	1.667	0.370 – 7.515	0.762
	Female	3	15	18			
Religion	Hinduism	6	23	29	0.848	0.202 – 3.565	1.000
	Islam	4	13	17			
Area of Residence	Urban	6	19	25	1.342	0.323 – 5.577	0.963
	Rural	4	17	21			
Level of Education	< Middle School	5	22	27	0.636	0.156 – 2.604	0.788
	≥Middle School	5	14	19			
Family Type	Joint	6	16	22	1.875	0.451 – 7.802	0.608
	Nuclear	4	20	24			
SES	Higher SES	4	10	14	1.733	0.402 – 7.466	0.723
	Lower SES	6	26	32			
Type of Work	Sedentary	9	26	35	3.462	0.387 – 30.958	0.455
	Non-sedentary	1	10	11			
Hypertension	Absent	5	15	20	1.400	0.343 – 5.709	0.913
	Present	5	21	26			
Diabetes	Absent	3	19	22	0.383	0.085 – 1.723	0.359
	Present	7	17	24			
Number of chronic diseases present	Single disease diagnosed	8	24	32	2.000	0.366 – 10.919	0.673
	More than one disease diagnosed	2	12	14			
Overall Level of satisfaction	Satisfied	8	28	36	1.143	0.201 – 6.494	1.000
	Not Satisfied	2	8	10			
Satisfaction with attending physician	Satisfied	9	34	43	0.529	0.043 – 6.517	1.000
	Not Satisfied	1	2	3			
Satisfaction with associated health staffs	Satisfied	6	18	24	1.500	0.361 – 6.230	0.840
	Not Satisfied	4	18	22			
Satisfaction regarding Cost	Satisfied	0	9	9	--	--	0.189
	Not Satisfied	10	27	37			
Satisfaction regarding time spent	Satisfied	3	6	9	2.143	0.428 – 10.738	0.624
	Not Satisfied	7	30	37			
Exhaustion	Not exhausted	2	9	11	0.750	0.134 – 4.203	1.000
	Exhausted	8	27	35			
Satisfaction regarding Cleanliness	Satisfied	3	16	19	0.536	0.119 – 2.410	0.647
	Not Satisfied	7	20	27			

FIGURE 1. Bar chart showing provisional diagnoses of the study participants. (n=46) (Multiple response)

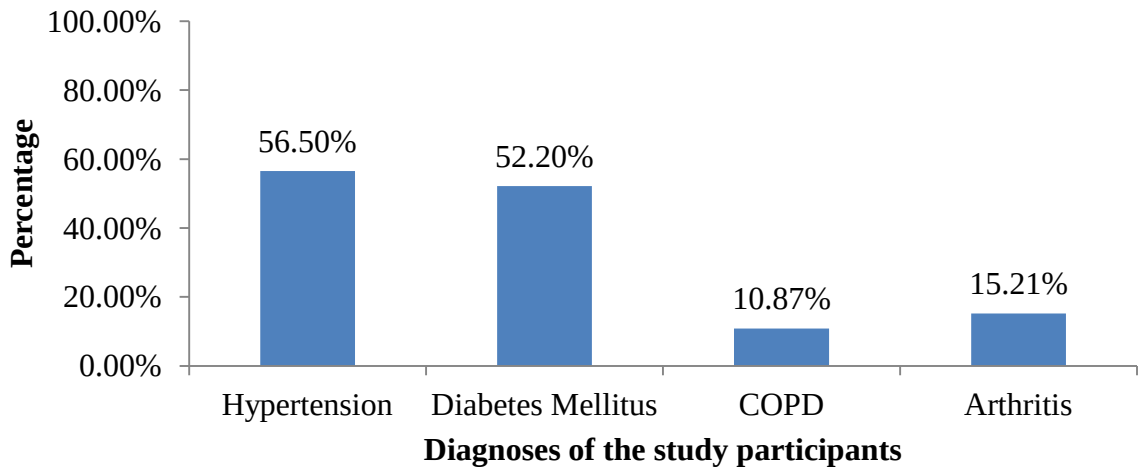


FIGURE 2. Distribution of study subjects as per different variables related to satisfaction about OPD services. (n=46)

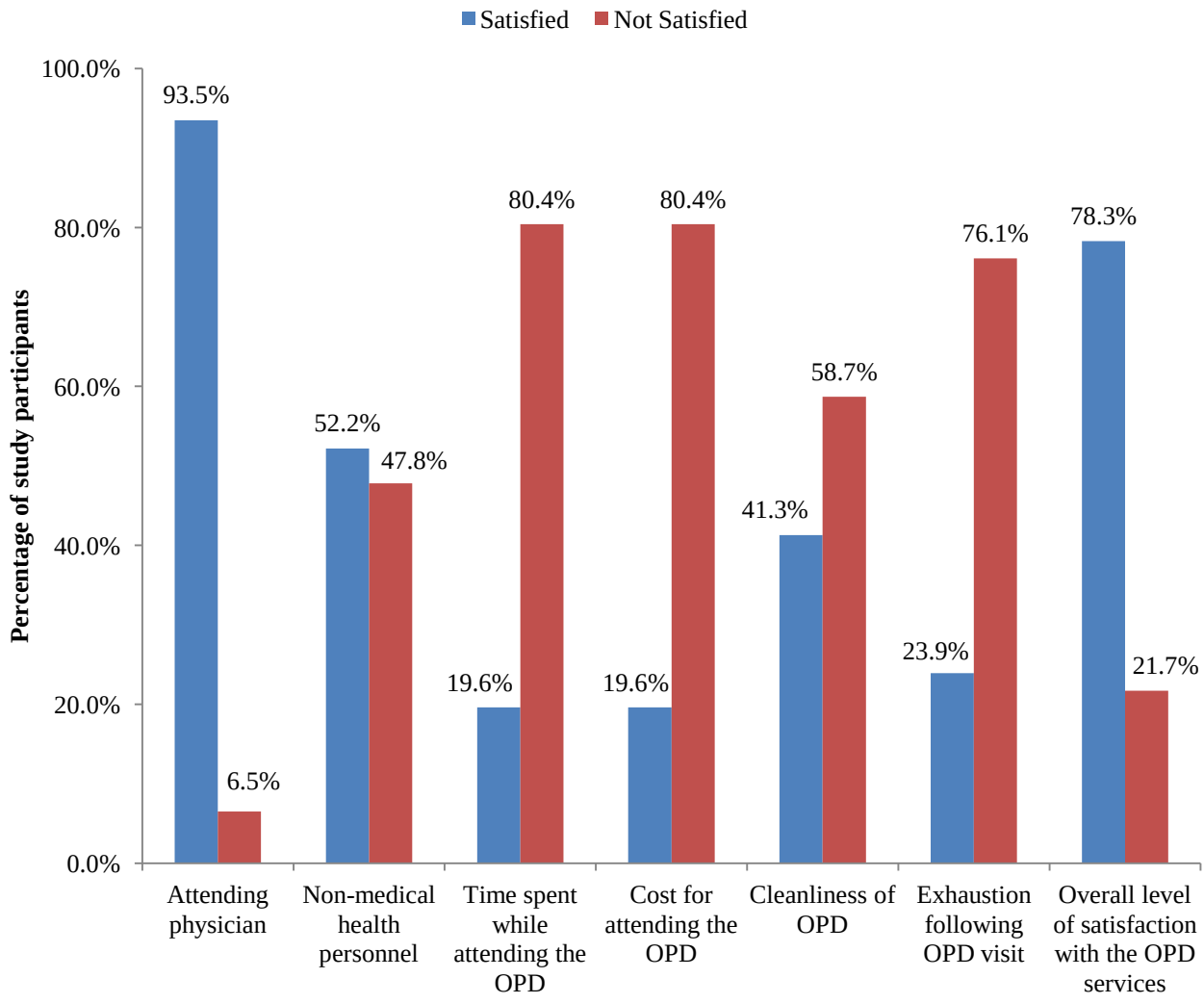
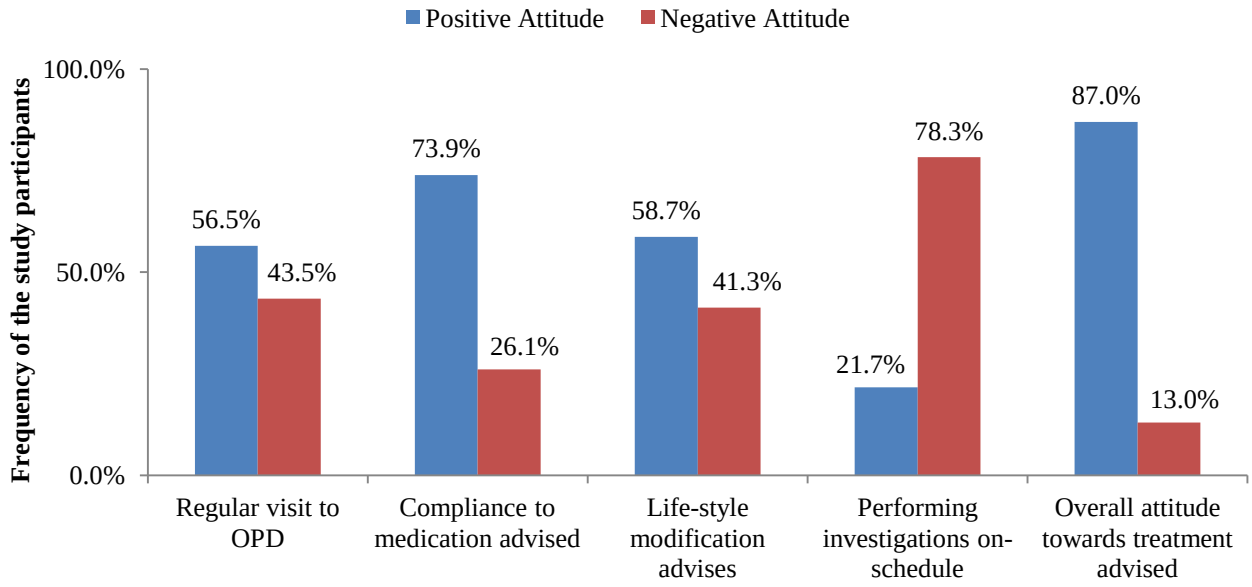


FIGURE 3. Distribution of study participants as per attitude towards treatment provided. (n=46)



Different variables (pooled) related to attitude regarding different aspects of treatment provided

DISCUSSION & CONCLUSION

In this study majority of the study participants were being diagnosed with Hypertension and Diabetes Mellitus, which was consistent with the growing burden of these two diseases. Attitude towards investigation advised and life-style modification advises were found to be poor (negative) among the majority but attitude regarding medication advised was found to be better and the overall attitude regarding treatment was also better among the majority. This is most likely due to over-dependence of the patients regarding medicines & a general lack of awareness regarding life-style measures and importance of investigations.

In their study, Mohd A. and Chakravarty A. found out behavior of staffs, waiting time to be important factors behind OPD satisfaction and affect the treatment-seeking behavior.[4] In this study the behaviors of neither the non-medical staffs nor the doctors seemed to have any statistically significant relationship with the level of overall attitude. In the study conducted at Nigeria [3] age was found to be an important predictor, but in this study no statistically significant association could be established except with attitude towards performing investigations on-schedule. The association between overall level of satisfaction and overall attitude regarding treatment was noted to be statistically significant. It was presumed that satisfaction with time-spent and cost would have a relationship with attitude towards OPD treatment, but there was no such relationship. This may be attributed to relatively small sample size.

Level of education, occupation and type of family was thought to have association with attitude regarding OPD visit, but again no such relationship could be established statistically. However out of the socio-demographic variables religion (Hinduism/Islam) and area of residence (urban/rural) were found to have statistically significant association with attitude regarding visit adherence. This can be understood simply by the fact that it is in general easier for urban population to avail the health services owing to the better communications and accessibility. Still association of religion to attitude towards visit adherence may be due to several socio-cultural factors pertinent to either religion.

Statistically significant association was not observed between any satisfaction and attitude towards medication advised. Rather a statistically significant protective relationship was observed in terms of area of residence (urban/rural).This may be explained by the fact that overall life-style is different in urban and rural area. Rural population when attend tertiary care hospitals, tend to depend fully on the treatment advised, which sometimes is not the case with the general urban patients, who have got other healthcare options easily available. Statistically significant association was not observed for presence of hypertension, diabetes mellitus or having single or multiple NCD diagnosis with any of the attitude variables considered in the study. This may be due to a small sample taken in this pilot study.

In future, similar studies with the help of the study tool used will be undertaken with a larger sample size in different level of settings, to find out the different relationships among these variables more precisely. Also similar study can be planned with a community-based approach. The results would help us further to identify different areas that require rectification and the amount of impetus required from the point of view of healthcare delivery system in an Indian context for better out-patient management of the NCD patients.

CONFLICT OF INTEREST: None.

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