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Original Research Article

Medication non-adherence related to patients' attitudes and knowledge rather than socio-cultural factors: a study of cardiac clinic attendees at a public healthcare institute

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ABSTRACT

Background: Medication non-adherence contributes significantly to sub-optimum care, for reasons that could be unique to specific localities. The study sought to identify reasons for non-adherence and associated factors in cardiac clinic attendees at a leading tertiary health institution in Trinidad and Tobago.
Methods: This cross-sectional study included a convenience sample of cardiac clinic attendees. The data collection instrument was a questionnaire comprising items regarding socio-demographic characteristics, medical history, social support and reasons for medication non-adherence. Data were collected between March and July, 2016. Non-adherence was identified with total scores of >1 using selected similar questions to that used in the Morisky four-item adherence instrument. Data analyses involved both descriptive and inferential methods.
Results: Non-adherent patients represented the largest proportion of participants (n=270, 78.3%). Participants were predominantly women, aged >50 years, of Indo-Trinidadian descent, married, and unemployed. Carelessness (n=251, 93.0%), ceasing medication use when feeling well (n=217, 80.4%), forgetfulness (n=187, 69.3%), and ceasing medication use when feeling worse (n=151, 50.6%) were the leading reasons for non-adherence, followed by unpleasant effects of medication and cost (n=144, 53.3%). Associated factors included feeling that one would become more ill upon ceasing medication use (p=0.003), the importance of understanding the reasons for taking medication (p=0.017), the importance of following physicians' instructions (p=0.023), and educational level (p=0.040).
Conclusions: Effective communication regarding patients' concerns and potential adverse medication effects between patients and healthcare providers could promote greater adherence.

Keywords: Medication non-adherence, Cardiac patients, Reasons for non-adherence

INTRODUCTION

Non-adherence to medication regimens could effectively reduce positive outcomes.[1] The cost of non-adherence in the USA is approximately $105.4 billion annually.[2] Patients might make a conscious decision to avoid filling a prescription (primary non-adherence) or taking medication when available (secondary non-adherence). Previous studies conducted in several centres in various countries identified the following reasons for non-adherence: unavailability, prescription inadequacy, inaccessibility, lack of social support, medication concerns, miscommunication, generic alternatives, being tired of taking the medication, side effects, treatment/regimen complexity, economic factors, and health illiteracy.[3-8] However, reasons vary between settings. This study identified reasons for non-adherence and associations with selected factors in patients with

cardiac disease in a public health care institution. The identification of adherence gaps could facilitate medication adherence.

METHODS

Participants

A cross-sectional, descriptive study was conducted, and data were collected by trained medical students between 1 March and 31 July 2016 at a public health institution, the San Fernando General Hospital, which is a 745-bed hospital with a medical admission rate of approximately 33%; approximately 15% of these admissions were for cardiac disease. The institution serves half the population of Trinidad or approximately 600,000 people. Medical admissions account for a total of approximately 1,400 patients per month, of which 15 to 20% have cardiac diseases involving mainly unstable angina, arrhythmia, heart failure, or valvular heart disease. A single institution was chosen, as cardiac disease prevalence is similar across hospitals.

All cardiac clinic patients receiving treatment were eligible to participate in the study. A convenience sample of 350 cardiac clinic attendees, for which the size was determined via methods described by Lwanga et al, was recruited, with a 5% margin of error (Figure 1).[9]

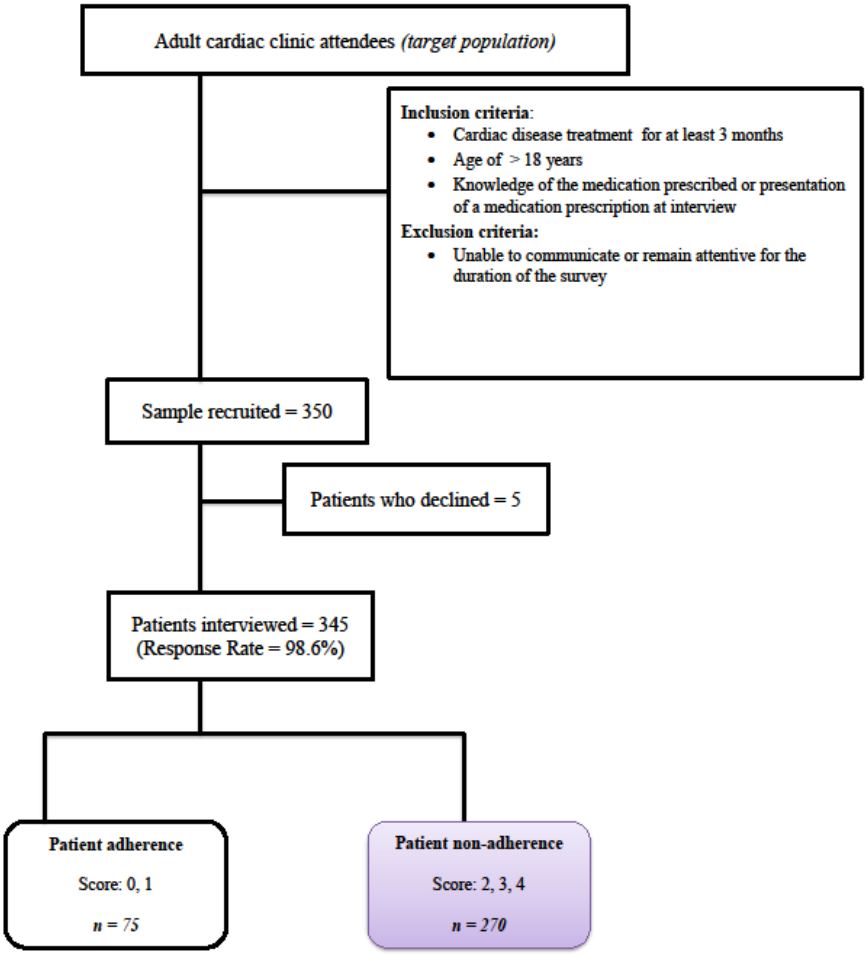

Figure 1: Recruitment process.

To complete the list of cardiac clinic attendees, systematic quota sampling was performed, with every tenth patient on a list of adult cardiac clinic attendees with an appointment the following day selected and contacted on the afternoon prior to attendance. Contacted patients were offered the option to participate voluntarily after the nature of the study was discussed. Patients who declined were not replaced. Consenting patients were asked to bring their medication or prescription sheets to assist in providing the required information during face-to-face interviews with a trained research assistant (a medical student) and which lasted approximately 20–30 min. The inclusion criteria were age of >18 years, cardiac disease treatment for at least 3 months, and knowledge of the medication prescribed or production of a medication prescription at interview. The exclusion criteria included difficulty communicating or inability to remain attentive for the duration of the survey. Ethical approval was

obtained from the ethics committees at the South–West Regional Health Authority.

Data collection tool

The data collection instrument was a pre-tested (for content, readability, design and comprehension) 126-item questionnaire. Selected items of interest included selected socio-demographic variables (nine items: age, sex, ethnicity, marital/civil status, employment status, monthly income, highest level of education, duration of clinic attendance, and the period during which patients knew that they had a heart condition); medical history (30 items); patient support mechanisms (four items); patient perspective/ information /knowledge (eight items); medication non-compliance because of medication/health issues (eight items), personal issues (18 items), social/cultural/economic issues (eight items), healthcare provider issues (five items), and compliance (six items); general information (six items); and lifestyle-related factors (five items). Patient's response to many questions were 'Yes' or 'No'. Included among these questions were similar questions used in the Morisky Medication Adherence Scale (MMAS-4). The questions selected as reasons for noncompliance dealt with 'forgetfulness', 'carelessness', 'feeling well and does not need medication' and 'feeling worse or experiencing unpleasant effects or complications'. Though questions are not identical they carry a similar meaning in our local population. A score of 0 was assigned to a 'Yes' response (or adherence), and a score of 1 was assigned to a 'No' response (non-adherence). Maximum total summed scores ranged from 0 to 4. The MMAS-4 which utilises similar scoring has been used to assess medication adherence in similar studies.[10] The non-adherent patients identified as having total scores of >1 (or scores of 2, 3, and 4) were interviewed to determine their reason or reasons for non-adherence in a local setting.

All collected data were entered into a secure database, which was accessible to the researcher, statistician, and assistants. In the data analyses, both descriptive and inferential statistics were obtained using chi-squared tests with a significance level of $p<0.05$. Data were analysed using SPSS 21 (IBM).

RESULTS

In total, 345 patients were included in the analyses (valid response rate=98.6%). Participants' mean age was 61.2 (SD=11.27) years. The socio-demographic characteristics of non-adherent, adherent, and all patients are shown in Table 1. The proportion of non-adherent patients was 78.3% (n=270). These patients were mainly severely non-adherent (73.7%), with scores of 3 (45.2%), 4 (28.5%), and 26.3% of patients had a score of 2.

Table 1: Patients' socio-demographic characteristics (n=345).

Variable	Non-adherence n=270 (78.3%)	Adherence n=75 (21.7%)	Total n=345 (100%)
	N (%)	N (%)	N (%)
Sex			
Male	116 (43)	29 (38.7)	145 (42.0)
Female	154 (57.0)	46 (61.3)	200 (58.0)
Age (years)			
≤35	7 (2.6)	2 (2.7)	9 (2.6)
36–50	33 (12.2)	4 (5.3)	37 (10.7)
51–65	124 (45.9)	30 (40.0)	154 (44.6)
66–80	99 (36.7)	33 (44.0)	132 (38.3)
>80	7 (2.6)	6 (8.0)	13 (3.8)
Ethnicity			
African	59 (21.9)	11 (14.7)	70 (20.3)
Indian	209 (77.4)	61 (81.3)	270 (78.3)
Other	2 (0.7)	3 (4.0)	5 (1.4)
Marital Status			
Single	61 (22.6)	15 (20.0)	76 (22.0)
Married	148 (54.8)	33 (44.0)	181 (52.5)
Divorced/Separated	7 (2.6)	3 (4.0)	10 (2.9)
Common law	6 (2.2)	0 (0.0)	6 (1.7)
Widowed	48 (17.8)	24 (32.0)	72 (20.9)
Employment status			
Employed	53 (19.6)	8 (10.7)	61 (17.7)
Unemployed	217 (80.4)	67 (89.3)	284 (82.3)

Continued.

Variable	Non-adherence n=270 (78.3%)	Adherence n=75 (21.7%)	Total n=345 (100%)
	N (%)	N (%)	N (%)
Monthly income (Trinidad & Tobago Currency)			
Under $3,000	86 (31.9)	15 (20)	101 (29.3)
$3,000–5,000	1175 (64.8)	59 (78.7)	234 (67.8)
>$5,000	9 (3.3)	1 (1.3)	10 (2.9)
Highest educational level			
Below primary school	8 (3.0)	5 (6.7)	13 (3.8)
Primary school	178 (65.9)	58 (77.3)	236 (68.4)
Secondary school	69 (25.6)	9 (12.0)	78 (22.6)
Tertiary education	15 (5.6)	3 (4.0)	18 (5.2)

Table 2: Reason for medication non-adherence (n=270).

Reason	N	%
Medication-related factors		
Unpleasant effects/complications	110	40.7
Long therapy duration	40	14.8
Too much medication	122	45.2
Fear of toxicity	34	12.6
Complexity of medication regime	18	6.7
Fear that long-term use could be damaging	36	13.3
Personal or patient-related factors		
Psychological issues		
Stressful life events	53	19.6
Forgetfulness	187	69.3
Carelessness	251	93.0
Lack of motivation	34	12.6
Feels well and does not need medication	217	80.4
Tired of taking the medication	96	35.6
Understanding issues		
Failure to collect medication	52	19.3
Does not see the importance of medicine	38	14.1
Poor awareness of the importance of treatment and understanding of side-effects	21	7.8
Does not require medication because disease is under control	28	10.4
Ceases medication if feels worse after use	151	59.6
Other issues		
Drug/substance abuse	3	1.1
Mental illness	5	1.9
Depression	16	5.9
Prefers not to take medication and wants to be left alone	17	6.3
Physical disability	26	9.6
Problems taking time off	11	4.1
Cost of travel to obtain medication	22	8.1
Problems securing accompaniment to obtain medication	10	3.7
Social/cultural/economic factors		
Cost	144	53.3
Unemployed/cannot afford medication	82	30.4
Prefer CAM as a substitute for medication	21	7.8
Prefer to use CAM use as a supplement	38	14.1
Family prevention	8	3.0
Social stigma	6	2.2
Lack of support	22	8.1

Continued.

Reason	N	%
Healthcare provider factors		
Poor patient-physician communication	40	14.8
Language/jargon barrier	46	17.0
Insufficient explanation of medication regimen	44	16.3
Insufficient time with doctor to understand medication regimen	48	17.8
Difficulty understanding information	28	10.4
Overwhelmed with leaflet information	8	3.0
Lack of confidence in prescribing doctor	40	14.8
Healthcare system factors		
Lifestyle change required	26	9.6
Unavailability of medication	31	11.5

Note. CAM = complementary and alternative medicine.

Table 3: Patient attitudes and adherence.

Variable	Patient adherence n (%)		P value
	Non-adherence	adherence	
	N (%)	N (%)	
I see my physician regularly (or as required) for routine medical checks	246 (91.1)	62 (82.7)	0.196
Heart patients will become more ill if they cease medication use	247 (91.5)	62 (82.7)	0.003
Cardiovascular diseases can cause health complications	248 (91.8)	66 (88)	0.632
Medication for heart diseases will prevent or delay complications	252 (93.4)	68 (90.7)	0.680
Patients should be consulted and consent to taking their medication	254 (94.1)	66 (58.4)	0.157
It is important to understand the reasons for taking medication	260 (96.3)	66 (88)	0.017
It is important to follow physicians' instructions	263 (97.4)	68 (90.7)	0.023

Reasons for non-adherence

The reasons for non-adherence provided by patients were classified into five categories: personal or patient-related, medication-related, social/cultural/economic, healthcare provider, and healthcare system factors. Of these, carelessness, ceasing medication use when feeling well, forgetfulness, and ceasing medication use when feeling worse were the leading reasons for non-adherence (Table 2). Other common reasons included cost and having to take too much medication. Several patients claimed that being tired of taking their medication led to their non-adherence, while others attributed it to unpleasant effects and/or complications.

Associations

There were no associations between patient adherence and age (p=0.077); sex (p=0.597); ethnicity (p=0.052); monthly income (p=0.071); social support from spouse (p=0.214), family/children (p=0.194), friends (p=0.589), or caregiver (p>0.217); self-assessment of medication compliance, which was described as good (n=161; 59.6%), very good (n=87; 32.2%) or poor (n=22; 8.1%; p=0.293); social status (p=0.171) or self-reported health status (p=0.354). However, patient adherence was associated with educational level (p=0.040) and patients' attitudes or knowledge. Non-adherence was significantly associated with the feeling that one would become more ill upon ceasing medication use, the importance of understanding the reasons for taking medication, the importance of following physicians' instructions, and educational level (Table 3).

DISCUSSION

The proportion of non-adherent patients in the cardiac disease clinic was 78.3%, based on scores of >1 (i.e. scores of 2, 3 and 4). This proportion is rather high, but similar findings have been reported in many countries including Yemen (54.2%) and Malaysia (74.0%).[10,11] Further, Mujtaba et al showed that 72.7% of patients with heart failure were non-compliant with medication, Desai et al. reported that more than 50% of patients with coronary artery disease did not adhere to their prescribed therapies, and Sundbom et al reported that 66.4% of participants using prescription medication were non-adherent to their prescribed regimens.[12,13] In the current study, non-adherent patients were predominantly women, aged 51–65 years, earned a monthly household income of $3,000–5,000 (Trinidad and Tobago dollars), and were educated up to primary school level. Maan et al. reported a similar profile for non-adherent patients, who were mainly younger, women (72%), married (60%), and less well educated (28%) with low socio-economic status (54%).[14]

There were multiple reported reasons for non-adherence including patient or personal, medicine-related, socio-cultural/economic, healthcare provider, and health system

factors. This is similar to the classification proposed by Frances et al. who categorized the reasons for non-adherence in elderly patients into patient, medication, healthcare provider, and socio-economic factors.[15] All patients identified personal factors as contributory to non-adherence. The most common reasons reported by Santra et al., who examined non-adherence in patients with ischaemic heart disease but to a lesser extent, were carelessness, ceasing medication use when feeling well, forgetfulness, and ceasing medication because of feeling worse upon use.[16] Moreover, lack of understanding of medication use was reported by Mujtaba et al, who found that 15.5% of patients do not feel the need to take medication.[3] Less common patient factors identified in the current study included access challenges, such as physical disability; problems getting time off; travel costs; and difficulty finding someone to accompany patients.

Medication-related factors

Less common medication-related factors included long therapy duration, fear of toxicity, lifestyle changes, feeling overwhelmed with leaflet information, and difficulty understanding information. Medication characteristics, including pill appearance (colour and shape) and compliance, were not analysed in this study because of the relatively small sample size.[17] However, pill characteristics, such as changes in colour and shape, have been reported to improve adherence.[17] In addition, knowledge of side effects, which is a major barrier to compliance with dosing regimens; fear of dependence; feeling stigmatized by one's disease; and having no medicine or running out of medicine have been found to lead to non-adherence.[18-20]

Healthcare provider factors

The results showed that non-adherence was related to poor patient-physician communication, language/jargon barriers, insufficient explanation of medication regimens, and insufficient time with doctors to understand medication regimens. This is consistent with the findings of similar studies. In addition, side effects, lack of understanding of benefits, lack of education regarding medication, distance from the hospital, and poor physician communication have been associated with non-adherence.[21-23]

Social, cultural, and economic factors

In addition to cost and unemployment, family prevention, lack of support, social stigma, and a preference for complementary and alternative medicine contributed to non-adherence. Ganasegeran et al. reported that a preference for traditional medicine was associated with medication non-adherence in survivors of myocardial infarction.[11] Further, inadequate prescriptions (20.2%), financial issues (15.5%), medication cost, social stigma, and family support have been associated with improved medication adherence in patients with heart failure.[3,24-27]

Health system factors

Few patients reported that unavailability of medication or a requirement for lifestyle changes resulted in non-adherence. However, with the lack of public health facilities and infrastructure in the country, along with the considerable number of complaints regarding the health service, one would expect these factors to contribute to non-adherence.[28] This finding is inconsistent with the findings reported by Al Hamid et al, who showed relationships between adherence and the source and availability of medication, easy accessibility, and patient satisfaction with healthcare providers.[29]

Associations

With the exception of educational level, socio-demographic factors (e.g. age, ethnicity, marital status, social suppport, and employment status) were not significantly associated with medication adherence. With respect to social support, this finding could have occurred because of the unreliability or unavailability of support. Some studies have reported a direct relationship between the receipt of practical support and the extent of medication adherence.[30-32] Non-adherence to medication was associated with patients' attitudes, knowledge, and educational levels. Other factors contributing to adherence, such as patients' belief that they would become more ill if they ceased medication use, the importance of understanding the reasons for taking medication, and the importance of following physicians' instructions, were reported by Lan et al, who showed that compliance was positively correlated with patients' attitudes toward treatment.[33] Knowledge was also a determinant of medication adherence, as reported by Van der Waland et al and Hope et al.[34,35]

Limitations

This study relied heavily on participants' recall, which could have resulted in over- or under-estimation of medication use. In addition, the sample size was too small to allow analysis of sub-groups of cardiac patients. The selection of only cardiac patients from a single institution limited the generalizability of the findings to other centres and patients with other diseases. However, in Trinidad and Tobago, patients' behaviour is consistent across diseases and locations, and similar findings could be observed throughout the country and for other diseases.

CONCLUSION

A large proportion of patients were non-adherent for multiple reasons; however, the most common of these involved personal factors. Promoting greater adherence is difficult, as the reasons for non-adherence differ between patients, healthcare providers, health systems, and socio-economic and cultural situations.

Recommendations

A multi-pronged approach involving practices such as training physicians in communication skills, addressing patients' concerns and potential adverse effects of drugs, and increasing patient empowerment, is required to improve adherence.

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