

Assessment of Health-Related Quality of Life and Drug-Related Problems In Cardiometabolic Patients In A Tertiary Care Hospital.

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Abstract:

Introduction: The cardiovascular metabolic syndrome is a collection of metabolic abnormalities associated with an elevated risk of cardiovascular disease.

Material and methods: A prospective observational study was carried out on 200 patients attending general medicine, outpatient and inpatient department in tertiary care hospital from September 2020 to March 2021. The Quality of life was assessed using 12-items of Short Form Survey (SF-12), while the Drug Related Problems (DRPs) was assessed using Pharmaceutical Care Network Europe (PCNE) classification. Data was statistically evaluated using Mann Whitney U test.

Results: The study results demonstrated that 108 were male (54%) and 92 were female (46%). Health related quality of life in cardio metabolic patients had a significant effect on both male and female (*P value* of less than 0.00001) and also the duration of disease of more than ten years have a marked effect on emotional wellbeing and role of limitations in emotional wellbeing (*P value* of less than 0.00001 and 0.01778). During our study a total of 629 drug related problems were identified. The most recurrent types of drug related problems were potential drug/dose selection (24%) and patients with psychological changes (41.33%).

Conclusions: The study found that the majority of the subjects were found to have moderate improvement in quality of life. The most recurrent types of drug related problems were potential drug/dose selection, patient/psychological.

Key-words: Cardio metabolic syndrome, Diabetes Mellitus, Health Related Quality of Life, Drug Related Problems.

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INTRODUCTION

Metabolic syndrome is a recognised collection of cardio metabolic illnesses that increase a person's risk of type 2 diabetes mellitus (T2DM), coronary cardiac disease (CHD), and cardiovascular diseases (CVD). The key components of metabolic syndrome include glucose intolerance or hyperglycaemia, obesity, high blood pressure, hyperlipidaemia, elevated triglyceride levels and decreased levels of HDL cholesterol [1,2].

Diabetes is a chronic and complicated metabolic disease that has become widespread in recent decades. Since 2000, the International Diabetes Federation (IDF) has reported the national, regional and global occurrence of diabetes. In 2009 it was estimated that 285 million people had diabetes (T1D and T2D combined) [3] increasing to 366 million in 2011 [4] 382 million in 2013 [5] 415 million in 2015 [6] and 425 million in 2017 [7]. The World Health Organisation redefined health in 1948, indicating

that it was characterised not only by the absence of sickness and infirmities, but also with the existence of physical, mental, and social well-being [8].

Health-related quality of life (HRQoL) is a wide, multifaceted term that incorporates self-reported physical and mental health measurements. In diabetic patients, health-related quality of life is critical because low quality of life leads to diminished self-care, which leads to impaired glucose control, increased risks for comorbidities, and diabetes worsening in both the short and long run [9]. A disease-specific, demographic, and psychological variables might impact physical function and well-being in patients with diabetes. These factors have far-reaching scientific and clinical ramifications [10].

In individuals with established CVD, it is thought to be especially sensitive as a primary outcome of interventions and therapies. After controlling for socio-demographic characteristics and specific

medical comorbidities, increased CVD risk is an independent prognostic factor of poor HRQoL in men and mobility, self-care, and typical activity issues in women [11]. Complications like this result in worse Quality of Life (QoL), increased mortality, higher health-care expenses, and lost productivity [12]. As a result, physicians should concentrate not just on risk factors, but rather on those at significant risk of CVD's subjective feeling of health [11].

Measuring HRQoL is one part of effective type II diabetes management. Despite the fact that chronically ill diabetes patients receive adequate care and support from healthcare providers, patients' evaluations of QoL may vary from those of health care professionals. Thus, assessing HRQoL will assist in the examination of treatment guidelines as well as the enhancement of patients HRQoL. Thus, it indicates that specific medical therapies, as well as educational and counselling interventions aimed at improving coping skills, can improve the health and quality of life of persons with diabetes mellitus [10, 13].

Drug-related concerns (DRPs) are therapeutic difficulties that have an actual or potential impact on the optimal health outcome. There is a significant prevalence of Drug Related Problems in diabetic patients, with an average of 4 DRPs per patient. This is most likely owing to individuals being given various medications to treat their medical issues, all of which induce DRPs. DRPs might be caused by a variety of circumstances.

DRP is caused, by altering the pharmacokinetics of anti-diabetic and lipid-modifying drugs which leads to liver and renal failure. DRPs in geriatrics might be caused by comorbidities, poor drug adherence, and polypharmacy, hyperlipidaemia and T2DM contribute significantly to cardiovascular problems thus, optimising care through DRP detection and prevention is critical [14].

The aim of the proposed study was to assess and evaluate Health Related Quality of Life and Drug Related Problems in cardio metabolic patients. The objectives were to assess the Drug Related Problems in a study population and to compare HRQoL with the demographics of the study participants.

METHODS

The study was conducted in outpatient and inpatient wards of department of general medicine of 500 bedded teaching hospital. This was a prospective observational study which was conducted for 6-months period. The subjects who were of age 18 years and above, those with confirmed diagnosis of type 2 diabetes mellitus and type 1 diabetes mellitus with or without co-morbidities of cardiovascular diseases, subjects with metabolic syndrome taking anti diabetic medications and subjects who were willing to participate in the study and signed written

informed consent were included. Lactating and pregnant women up to 12 weeks after partum and subjects with psychiatric disorders and those who were unable to answer the questions were excluded. Data was collected from the selected subjects with the help of structured questionnaire. Subjects were also counselled about their disease during their first visit and a follow up was done. Collected data was evaluated using statistical tool and analysis was done to evaluate the objectives of the study. Ethical clearance for this study was obtained from institutional Human Ethical Committee KLE College of Pharmacy, Hubballi and the corresponding protocol/approval number was KLECOPH/IEC/2020-21/02.

Study tools data was collected using a self-designed data collection form, which contains details like demography, chief complaints, history of present illness, medication and medical history. WHO QoL SF-12 was used to assess the HRQoL. A 12 question scale which consists of 7 multi item sections of HRQoL i.e., general health, physical function, result of physical health, pain interfere, mental health, emotional well-being and result of emotion well-being. The lower the score the more is the disability. Pharmaceutical Care Network Europe (PCNE) was used to assess Drug Related Problems. A 6 questions scale, drug/dose selection, drug use process, information, patient/physiological, logistics and others in which the specific health issue was included for the health concern.

Statistical analysis was performed using Mann Whitney U Test to find the association between quality of life in cardio metabolic patients and variables. All qualitative data was proportioned and quantitative data was examined statistically by determining mean, standard deviation, median, and interquartile range. The 95% confidence interval was used to express the results. When applicable, the results were also reported in frequency format and diagrammatic representation. When using inferential statistics to examine the association between HRQoL and characteristics such as gender, disease duration, and educational qualification, the results were deemed significant when P was less than 0.05.

RESULTS

This study included a total of 200 subjects among which 108 were male (54%) and 92 were female (46%). The mean age of the study population was found to be 41.37 ± 14.72 years. Age groups of 61-70 years were in majority accounting for 69 (34.50%) of the total population and age groups of 81-90 years were minimal in number i.e., 5 (2.50%). 5 (2.50%) were indulged in habits such as Smoking and 7 (3.50%) were alcoholic and the remaining 195

(97.50%) were non-smokers and 192 (96.50%) were non-alcoholic. The most commonly seen comorbidity was with hypertension of 112 (56%) patients and the least found comorbidity was diabetic foot with 2 (1%) patients. Duration of disease 150 (75.5%) were ≤ 10 years, 41 (20.50%) were > 10 years and 9 (4.50%) were newly detected diabetes mellitus.

Analysis of HRQoL in the study population using SF-12 revealed the average general health (GH), physical functioning (PF), pain and role limitation of physical functioning (RLEPF) to be 3.52 ± 1.08 , 3.89 ± 1.29 , 4.14 ± 1.17 and 3.445 ± 0.96 respectively. Physical functioning dimension had better average and the least average was seen in the role limitation due to physical health. Analysis of mental component revealed the average of mental health (MH), emotional well-being (EW) and role limitation due to emotional problems (RLEP) to be 12.37 ± 2.84 , 3.37 ± 0.80 and 4.08 ± 1.55 respectively. Mental health had the highest average and emotional well-being had the least average. The total average of four dimensions each under Physical Component Score (PCS) and three dimensions each under Mental Component Score (MCS) was found to be 14.995 and 19.82 respectively and the overall average of both PCS and MCS was 17.40.

On comparing the QoL scores in patients of different age groups, it was found that the patient belonging to the age group 31-40 years had lowest mean score for PCS i.e., 3.55, as shown in Table 1. On comparing the QoL scores in patients of different age groups and MCS, it was found that the patient belonging to the age group 71-80 years had lowest mean score for MCS i.e., 5.77, as shown in Table 2. In all the four domains of the Physical Component Summary i.e., physical functioning, role limitation due to physical health, pain and health changes, the average QoL scores in females was found to be more than that of males. The average scores of each domain is mentioned in Table 3. On comparing the mean scores of Mental Component Summary between males and females, it was found that females were affected more quality of life compared to males. The average values of all the three domains of MCS i.e., Role limitation due to emotional problems, mental health and emotional well-being are mentioned in Table 4.

The comparison of mean scores of the HRQoL in patients of different educational qualifications was done to see if there is any impact of educational status in their perception of their health. The highest score was seen in the illiterate i.e., 4.36. However, there were not much significant differences in their means. Table 5 shows the mean PCS scores in patients with different educational qualifications. And the Table 6 shows comparison of the MCS scores in patients of different educational status

revealed that the patients did not have much significant differences in their means.

SF-12 was used to assess the HRQoL of the subjects and the results were expressed in terms of seven domains. Mann Whitney U test was performed between the gender and the 7 domains. Indicated that all seven domains show significance with gender. The test also showed that gender had a significant effect on the rest of the domains (general health, physical functioning, pain, role of limitation due to physical health, mental health, emotional well-being and role of limitation due to emotional health) as presented in Table 7.

Mann Whitney test was performed to find the association between the duration of treatment and HRQoL. A significant association was found between the role of limitation due to physical health and duration of treatment (*P value* 0.01778), emotional well-being and duration of treatment (*P value* less than 0.00001) indicating that subjects who had completed more than ten years of their treatment had marked effect in role of limitation due to physical health and emotional well-being scores respectively as presented in Table 8

Mann Whitney U test was performed between the education qualification status and 7 domains, as presented in Table 9. The test showed that educational qualification status had a significant effect on 4 domains (general health, physical functioning, pain and mental health) and there was no difference found in other domains (role of limitation due to physical health, emotional well-being and role of limitation due to emotional health).

DRUG RELATED PROBLEMS ASSOCIATED WITH CARDIOMETABOLIC PATIENTS

A total of 629 drug-related issues were discovered. The most common forms of drug related problems were probable drug/dose selection 151 (24%), patients with psychological abnormalities 260 (41.33%), patients forgetting to use/take medications 32 (5.08%), and patients refusing to adjust to lifestyle changes 31 (4.92%). The pharmacological classification of antihypertensive, anti-diabetic and anticoagulants were most likely to be related with DRPs. Male gender, renal impairment, and polypharmacy were all shown to be significantly linked with DRPs in cardio metabolic patients. The results were shown in Table 10.

DISCUSSION

This was one of the few studies that we were aware of to assess health related quality of life and drug related problems in cardiometabolic patients in tertiary care hospitals. In our study a total of 200 patients were included among which males are more than females. Age groups of 61 to 70 years were major (34.50%). As age increases, there was a decrease in quality of life among the participants. Quality of life significantly improved with exercise longer than 30minutes daily which was consistent. Most of the patients were illiterates. Chronic heart disease and high blood pressure were twice as common, and more than half of diabetic patients had at least one macrovascular condition in addition to diabetes, was observed by J.Hanninen et al., study. Similarly in our study, hypertension was the most common comorbid condition. It is critical to prevent macrovascular problems in diabetes mellitus in order to improve quality of life. [15] The mean physical component summary and mental component summary scores were significantly lower in diabetic patients. These findings are consistent with the observations of Amer H. Al-shehri et al., females are more than males and age groups of 40-49years (36.5%) are major with most of the patients being illiterate. Diabetic complications reported more (72.6%) particularly in retinopathy patients. The mean physical component summary and mental component summary scores were significantly lower in diabetic patients [16]. Decreased HRQoL in patients with diabetic was mainly due to large vessel and microvascular complications. The presence of macrovascular illnesses, low visual acuity, insulin therapy, and obesity were all predictors of poor growth quality of life. Significant and major impairments in all aspects of quality of life. As a result, the deterioration in quality of life might be attributed to the influence of their consequences on physical and mental function of patients.[15]

In our study overall, the SF12 score was lower in males than females. Females reported considerably better quality of life ratings than males in all seven domains. These findings contradict the findings of Gautam et al. and Chittleborough et al., who found that quality of life scores among males were higher in all domains except general health and liveliness. [17,18]. Glassgow et al., reported that males had significantly higher quality of life than females [19]. This condition contributed to improved health and quality of life among women as they overcame T2DM-related problems. Better schooling and abilities to control diabetes positively had a major influence on relationships between females and QoL, whereas more age, reduction activities of daily living, and awareness of hyperglycemia were significant with general health among women. Self-

care activities, diabetes education, and medicine all have a substantial impact on women's health. Women who engage in more physical exercise have a greater quality of life and a better grasp of their diabetes. [20]

In our study gender was significant in all domains associated with health and quality of life such as general health, pain, role limitation of physical function, mental health, emotional wellbeing, role limitation of emotional wellbeing with a *P value* less than 0.00001 and physical function with a *P value* 0.00152. Similarly M. Riaz et al., reported significant effect on gender with all the seven domains of HRQoL (general health, pain, role limitation of physical function, physical function, mental health, emotional wellbeing, role limitation of emotional wellbeing) [21]. Also a significant association was found between the role limitation of physical health and duration of disease (*P value* of 0.01778) and also on emotional wellbeing and duration of disease (*P value* of less than 0.00001). The test also revealed that the length of therapy had no significant influence on rest of domains. According to M. Riaz et al., the study also depicted the significant association between duration of treatment and health related quality of life where all the eight domains were significant [21].

The 12-items of Short Form Survey (SF-12), developed from 36-items of Short Form Survey (SF-36), has been shown in hospital and demographically applications in the United States and other countries to be consistent and valid.[22] The Short Form Survey-12 questionnaire was simple to use, and most patients completed it in a matter of minutes. It appeared to be sensitive enough to detect variations among diabetic patients, and it is practical for use. Strategies that address these characteristics, which directly or indirectly impact quality of life, such as comorbidities, level of education, and economic position, may boost compliance, resulting in improved metabolic control and eventually a reduction in problems. Thus, diabetic awareness should be a part of diabetes care since the ultimate objective of diabetes therapy is to enhance health-related quality of life. [23]

In current study drug related problems were assessed with help of various domains such as drug or dose selection(A), process of drug use(B), patient information(C), patient psychological(D), Logistics(F), Others(E) and the percentage values were found as 151(24.0%), 72(11.44%), 101(16.05%), 260(41.33%), 62(9.85%), 37(5.88%) respectively. The total DRPs was found to be 629.

In a similar study conducted by Zaman Huri et al., study DRPs were assessed with help of various domains such as selection of drug or dose(A), process of drug use(B), patient information(C),

patient psychological(D), Logistics(F), Others(E) and the percentage values were found as 22(4.4%),31(6.4%),140(28.5%),18(3.6%),3(0.6%). [14]

Towards the best of our knowledge, this is among the few studies to evaluate DRP prevalence and associated factors in real clinical practise during hospital admission in the context of a standardised medication management and pharmaceutical care programme, along with a valid and reliable record of DRP intervention strategies with a global representation of medical specialties. In a group that reflects global demographic trends of ageing, comorbidities, and polypharmacy, we discovered a significant prevalence of DRP, with the majority of cases being caused by medication or dosage selection. Pharmacists intervention was accepted in the majority of instances, averting potentially unfavourable health effects. Only polypharmacy, renal impairment, allergies, and a high BMI were related with a greater frequency of DRP.

Limitation of Study: The study should be conducted in ICU and will be compared with outpatient and inpatient departments. The duration of study can be increased, so that we can assess more health outcomes. The future study will be conducted on greater sample size. The same study can be conducted in general public and various departments like obstetrics and gynecology, dermatology, paediatrics, psychiatric so and so.

CONCLUSION

As age increases, there was a decreased quality of life in study. The mean physical component score and mental component score were significantly lower in cardio metabolic patients. Females reported significantly higher scores of quality of life than did male in all seven domains. As women overcame hurdles in managing with type 2 diabetes mellitus this condition contributed to improved quality of life and health. Interactions amongst females and quality of life were shown to have a considerable influence owing to greater schooling and the capacity to manage diabetes favorably. The decline in standard of living was more noticeable in terms of physical health than in terms of emotional well-being. The study found that the health related quality of life in cardio metabolic patients had a significant effect on all age groups and also the duration of disease of more than ten years has a marked effect on emotional well-being and role of limitations in emotional well-being. Majority of the subjects were found to have moderate improvement in quality of life. Diabetes education results in improved quality of life. The most recurrent types of DRP were potential Drug or Dose selection, Patient Psychological. In order to properly manage the patients, PHC practitioners must be informed about

health-related quality of life in type 2 diabetes patients and the factors that impact it. They must be given up-to-date information in this area of medical practice. And the need for continual medical education programs regarding diabetes for doctors at primary health-care centers, as well as the need of involving nursing staff in this sector, in order to achieve a higher health related quality of life and better diabetes control.

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Conflicts of interest

There are no conflicts of interest.

Ethical conduct of research

The authors also attest that this clinical investigation was determined to require Institutional Review Board/Ethics Committee review, and the corresponding protocol/approval number is KLECOPH/IEC/2020-21/02. REFERENCES

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TABLES:

Table 1: Comparison of PCS score in patients of different age group

Table 1: Comparison of PCS score in patients of different age group					
Physical Component Summary					
Age groups	General Health	Physical Functioning	Pain	Role Of Physical Wellbeing	Mean

21-30	3.5	5.166	3.5	3.66	3.95
31-40	2.94	3.88	4.29	3.11	3.55
41-50	3.18	3.54	4.29	3.40	3.60
51-60	3.6	3.93	4.54	3.53	3.909
61-70	3.71	3.92	3.8	3.43	3.71
71-80	3.71	3.90	4.20	3.42	3.71
81-90	3.8	4	4.6	4	4.1

Table 2 : Comparison of MCS score in patients of different age groups

Table 2 : Comparison of MCS score in patients of different age groups					
Mental Component Summary					
Age Groups	Mental Health	Emotional Wellbeing	Role Of Emotional Wellbeing	Mean	
21-30	13.16	3.5	5.33		7.33
31-40	13.58	3.41	4.17		7.05
41-50	13	3.72	4.37		7.03
51-60	14.08	3.6	4.6		7.42
61-70	11.39	2.98	3.60		5.99
71-80	10.04	3.61	3.66		5.77
81-90	11.6	2.8	3		5.8

Table 3 : Comparison of gender differences in the PCS score.

Table 3 : Comparison of gender differences in the PCS score.					
Physical Component Summary					
Gender Differences	General Health	Physical Functioning	Pain	Role Of Physical Wellbeing	Mean
Female	3.90	4.67	4.18	3.70	4.11

Male	3.16	4.09	3.20	2.96	3.46
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Table 4: Comparison of gender differences in the MCS score.

Table 4: Comparison of gender differences in the MCS score.					
Mental Component Summary					
Gender	Mental Health	Emotional Wellbeing	Role Of Emotional Wellbeing	Mean	
Female	13.78	3.68	4.54		7.33
Male	11.06	3.07	3.65		5.92

Table 5: Comparison of educational status in the PCS score

Table 5: Comparison of educational status in the PCS score.					
Physical Component Summary					
Educational Status	General Health	Physical Functioning	Pain	Role Of Physical Wellbeing	Mean
Literate	3.829	3.2159	4.125	3.431	3.65
Illiterate	3.303	3.758	5.55	4.852	4.36

Table 6: Comparison of educational status in the MCS score.

Table 6: Comparison of educational status in the MCS score.					
Mental Component Summary					
Educational Status	Mental Health	Emotional Wellbeing	Role of Emotional Problems	Mean	
Illiterate	13.568	3.409	4.125		7.03
Literate	11.794	3.93	5.517		7.07

Table 7: Gender and Health Related Quality of Life

Table 7: Gender and Health Related Quality of Life							
Gender	General health	Physical functioning	Physical	RLPF*	Mental health	Emotional wellbeing	RL EW*
Male	3.1634	4.0961	3.2019	2.9615	11.0673	3.0769	3.6538
Female	3.8947	4.6770	4.1875	3.7083	13.736	3.6842	4.5263
<i>P Value</i>	<.001	.00152	<.001	<.001	<.001	<.001	<.001

*RLPH= Role Limitation due to Physical functioning ,RLEP= Role Limitations due to Emotional wellbeing

*For inferential statistics the relationship between quality of life and variables, the results were considered statistically significant whenever P is less than 0.05

Table 8: Duration of Disease and Health-Related Quality of Life

Table 8: Duration of Disease and Health-Related Quality of Life							
Duration of disease	General health	Physical functioning	Physical	RLPF*	Mental health	Emotional wellbeing	RL EW*
≤10 YEARS	3.5347	3.9652	4.1527	3.3472	12.5347	3.5208	4.1388
>10 YEARS	3.4634	3.7804	3.9268	3.7560	12.4146	2.7804	3.7317
<i>P Value</i>	0.7263	0.5961	0.2262	0.0177	.6672	<.001	0.1738

*RLPH= Role Limitation due to Physical functioning, RLEP= Role Limitations due to Emotional wellbeing

*For inferential statistics the relationship between quality of life and variables, the results were considered statistically significant whenever P is less than 0.05

Table 9: Educational Status And Health Related Quality Of Life

Table 9: Educational Status And Health Related Quality Of Life							
Educational qualification status	General health	Physical functioning	Physical	RLPF*	Mental health	Emotional wellbeing	RL EW*
Literate	3.829	3.215	4.125	3.727	13.568	3.931	5.522
Illiterate	3.303	3.758	5.562	3.785	11.794	3.9375	5.517
<i>P Value</i>	0.00078	.00634	<.001	0.3575	0.0018	.99202	.83366

*RLPH= Role Limitation due to Physical functioning ,RLEP= Role Limitations due to Emotional wellbeing

*For inferential statistics the relationship between quality of life and variables, the results were considered statistically significant whenever P is less than 0.05

Table 10: Drug Related Problems associated with Cardio metabolic Patients.

DRUG RELATED PROBLEMS ASSOCIATED WITH CARDIOMETABOLIC PATIENTS		
C1	Drug/Dose selection	151(24.0%)
C1.1	Inappropriate drug selection	26(4.1%)
C1.2	Inappropriate dosage selection	21(3.3%)
C1.3	Most cost- effective drugs available	31(4.9%)
C1.4	Pharmacokinetic problems, incl. ageing/deterioration in organ function and interactions	4(0.63%)
C1.5	Synergistic/preventive drug required and not given	5(0.79%)
C1.6	Deterioration/improvement of disease state	13(2.06%)
C1.7	New symptom or indication revealed/presented	19(3.02%)
C1.8	Manifest side effect, no other cause	32(5.08%)

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C2	Drug use process	72(11.44%)
C2.1	Inappropriate timing of administration and/or dosing intervals	21(3.33%)
C2.2	Drug underused/under-administered	4(0.63%)
C2.3	Drug overused/over-administered	19(3.02%)
C2.4	Therapeutic drug level not monitored	3(0.47%)
C2.5	Drug abused (unregulated overuse)	5(0.79%)
C2.6	Patient unable to use drug/form as directed	20(3.17%)
C3	Information	101(16.05 %)
C3.1	Instructions for use/taking not known	6(0.95%)
C3.2	Patient unaware of reason for drug treatment	15(2.38%)
C3.3	Patient has difficulties reading patient information form/leaflet	25(3.97%)
C3.4	Patient unable to understand local language	34(5.40%)
C3.5	Lack of communication between healthcare professionals	21(3.33%)
C4	Patient/Psychological	260(41.33 %)
C4.1	Patient forgets to use/take drug	32(5.08%)
C4.2	Patient has concerns with drugs	19(3.02%)
C4.3	Patent suspects side-effect	16(2.54%)
C4.4	Patient unwilling to carry financial costs	25(3.97%)
C4.5	Patient unwilling to bother physician	24(3.81%)
C4.6	Patient unwilling to change drugs	32(5.08%)
C4.7	Patient unwilling to adapt life-style	31(4.92%)
C4.8	Burden of therapy	24(3.81%)
C4.9	Treatment not in line with health beliefs	26(4.13%)
C4.10	Patient takes food that interacts with drugs	31(4.92%)
C5	Logistics	62(9.85%)
C5.1	Prescribed drug not available (anymore)	25(3.97%)
C5.2	Prescribing error (only in case of slip of the pen)	22(3.49%)
C5.3	Dispensing error (wrong drug or dose dispensed)	15(2.38%)

C6	Others	37(5.88%)
C6.1	Other cause specify	25(3.97%)
C6.2	No obvious cause	12(1.90%)
	TOTAL	629