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Research Article

Medication Adherence Survey and Influencing Factors Analysis of Patients with Dyslipidaemia in China: A Mixed-Methods Study

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Abstract

Background: The prevalence of dyslipidaemia is high, and patient compliance is the key part of clinical attention. **Objectives:** To understand the adherence status quo and related influencing factors of patients with dyslipidaemia, and to explore the reasons for patients' non-adherence. **Methods:** We used an interpretative sequential mixed methods approach. Patients with dyslipidaemia attending community clinics in Beijing from August 2020 to November 2021 were selected. Including the quantitative and qualitative research stage. **Results: Quantitative results:** Questionnaires were collected with an effective rate of 97.1%. BMI, Coronary Heart Disease, lipid knowledge, belief and behavior scores, anxiety and depression scores were statistically significant ($P<0.05$). Multiple stepwise linear regression analysis was conducted. There were statistically significant differences in body mass index, coronary heart disease, lipid knowledge level, behavioral level of improving lipid control and anxiety level. **Qualitative results:** Semi-structured interviews were conducted with 26 patients with dyslipidaemia. The transcribed text data were processed and analyzed by Colaizzi seven-step analysis method, and four themes were summarized as the reasons for non-adherence: Cognitive problems of patients, Patient attitude, Patient mental status and others. **Conclusions:** The awareness of lipids and control rate of dyslipidaemia patients in Beijing are low, and lipid-regulating drugs adherence is poor. Patients' BMI, complications and their knowledge, behavior level and psychological status are important factors affecting medication adherence. In order to effectively improve patient medication adherence, community management of patients with dyslipidaemia should be optimized, patients' knowledge level, attention and action ability should be enhanced, and the psychological status of patients be improved.

Keywords: Community; Dyslipidaemia; Medication adherence; Influencing factors; Mixed-methods study

Introduction

With the development of society and the change of human lifestyle, the global prevalence of dyslipidaemia remains high [1]. The 2016 Guidelines for the Prevention and Treatment of dyslipidaemia in Chinese adults showed that the overall prevalence rate in China was as high as 40.40% [2]. Data from 2019 indicate that up to 64.4% of patients have one or more lipid problems [3]. A number of studies conducted in several countries had shown that the overall prevalence of dyslipidaemia was high, but the awareness rate, the adherence rate of dyslipidaemia statins, the standard attainment rate, and the rate of lipid control was still low [4,5].

The long-term blood lipid abnormalities cause a series of complications, and the main is the atherosclerosis cardiovascular disease [6]. The World Health Organization (WHO) and The European Society of Cardiology /European Atherosclerosis Society (ESC/EAS) have also indicated that cardiovascular disease is the first major cause of death [7], which requires the attention of whole physicians.

Patient Adherence refers to the consistency of patients‘ behaviors such as medication use and medical orders [8]. Medication Adherence refers to the consistency of a patient‘s medication with medical advice [9]. In clinical practice, the Morisky Medication Adherence Scale-8 (MMAS-8) was often used to assess patients‘ medication adherence [10]. In short, to general practitioners, more researches should be carried out to explore the influencing factors of medication adherence in patients with dyslipidaemia, especially the influence of mental and psychological factors should not be ignored.

Methods

Study Design

We used a mixed method design with an explanatory sequential approach: an online survey followed by one-to-one interviews. The study was guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines18 and was reviewed [11], approved, and given an exempt determination by the Administration Institutional. The ethics approval number of this study was Beijing Gaobeidian Community Health Service Center Ethics Committee NO.029, and the registration number of the Chinese Clinical Trial Registry was ChiCTR2000037916.

Survey

Recruitment and selection of study subjects

A cross-sectional observational study was conducted in the form of a face-to-face questionnaire. The study included patients with dyslipidaemia who were taking lipid-regulating drugs in the community. The study samples were patients with dyslipidaemia who were treated in several community health service centers in Beijing. We developed a questionnaire and distributed it to AEGD and GPR program directors across the communities of Beijing city.

Inclusion criteria: (1) Be 18 years old or above, have good orientation to time, place, people, etc.; (2) There is a diagnosis of dyslipidaemia in the medical records of secondary or tertiary hospitals or community outpatient clinics, and currently taking lipid-regulating drugs for treatment; (3) Normal hearing, vision, understanding, cognitive ability and memory; and (4) Voluntarily participate in this study and sign the informed consent.

Exclusion criteria: (1) suffering from mental illness, such as schizophrenia, severe depression, etc.; (2) Patients with serious complications of the heart, brain, lung and other organs or serious abnormalities of liver and kidney function; and (3) Those who refuse to participate in the study or are unable to communicate normally.

The multi-stage stratified cluster random sampling method was used to identify the urban areas of Beijing included in the study, and then select community health service centers. Finally, the final 6 communities in urban areas were: Gymnasium Road and Hepingli Center in Dongcheng District, Gaobeidian and Sanlitun Center in Chaoyang District, Wanshou Road and Shuangyushu Community Health Service Center in Haidian District of Beijing. 70 patients were selected from each community, for a total of 420 dyslipidaemia patients.

Measurements

Questionnaire Development and Data Collection

We developed a questionnaire based on published literature. The general information of patients, disease information and medication situation, medication adherence evaluation, knowledge, belief and practice status of patients and mental and psychological data were obtained. MMAS-8 was adopted for adherence evaluation. The scale score <6 was classified as poor adherence, 6~8 was classified as medium adherence, and 8 was classified as good adherence.

A modified and homemade Knowledge Attitude Behavior (KAP) questionnaire was used to investigate dyslipidaemia [12,13]. KAP questionnaire includes three dimensions: knowledge, attitude and behavior. And the Cronbach‘s α coefficient of the questionnaire was above 0.7, and the retest coefficient was above 0.8.

The generalized Hospital Anxiety and Depression Scale (HADS) was used to assess whether patients had anxiety or depression [14]. The superimposed single item score diagnoses anxiety and the superimposed even item score diagnoses depression. An overall score of 0~7 indicates no depression or anxiety, an overall score of 8~10 indicates probable or „borderline“ depression or anxiety, and an overall score of 11~21 indicates probable significant depression or anxiety.

Semi-structured interview

The qualitative research adopts semi-structured interview method [15]. Guided by phenomenological research methods, the interviewee has a one-to-one conversation with the interviewee

in a purposeful way to understand the interviewee's cognition, attitude and behavior, so as to obtain first-hand information.

Patients with poor adherence in the quantitative study were sampled. The sample size is determined until the collected information is almost saturated and no new content is generated [16]. Obtained data includes: (1) patient's general information and disease information; (2) How much does the patient know about dyslipidaemia and lipid-regulating drugs; (3) What are the patient's views and thoughts about the disease and taking drugs. What is the current situation and attitude of patients; (4) The patient's mental and psychological status. The patient's emotional state; and (5) Supplementary and proposed content.

Statistical Analysis

Quantitative study of statistical methods

The data shall be entered into Epidata3.1 database by two persons, and then checked by two persons to confirm the accuracy of the data. SPSS 25.0 statistical software was used for data analysis. ANOVA analysis of variance was used for single-factor analysis, and multiple stepwise linear regression was used for multi-factor analysis. $P<0.05$ was considered to be statistically significant.

Qualitative research statistical methods

The collected audio was recorded and analyzed using Nvivo 12.0 software, and the data were comprehensively analyzed by combining the interview paper records. Within 48 hours after the interview, the audio data were transcribed, and the original audio was repeatedly listened to for verification and proofreading. Secure and standardized data archiving is carried out, and each interviewee has a separate interview folder. Traditional content analysis method is adopted to extract interview data, specifically referring to the Colaizzi seven-step analysis proposed by Paul F. Colaizzi [17].

Results

Survey findings

A total of 420 questionnaires were distributed in 6 community institutions in Beijing, and 408 valid questionnaires were recovered after excluding those with incomplete data, with an effective rate of 97.1%. Among them, there were 203 males and 205 females, aged (62.49±11.09) years old, the youngest age was 29 years old, the oldest age was 85 years old. The patient's low-density lipoprotein was (3.10±0.83) mmol/L. The characteristics of the patients are shown in Table 1.

Characteristics	n	%	Medication Adherence Scores	*t/F*	*P* Value
Sexuality					
Male	203	49.8	5.42±1.76	0.624	0.533
Female	205	50.2	5.30±2.00		
Age					
18~<60	133	32.6	5.17±1.88	1.396	0.613
≥60	275	67.4	5.45±1.88		
BMI (kg/m²)					
<18.50	2	0.5	2.50±2.48		
18.50~<24.00	146	35.8	5.53±1.86	4.564*	0.004
24.00~<28.00	196	48	5.46±1.82		
≥28.00	64	15.7	4.74±1.94		
Waistline					
normal	170	41.7	5.39±1.83	0.302	0.763
Abdominal obesity	238	58.3	5.33±1.92		

Educational level				0.587*	0.624
Primary and below	38	9.3	5.66±1.67		
Middle school	212	52	5.26±1.91		
Junior college	91	22.3	5.44±1.83		
Bachelor degree and above	67	16.4	5.38±2.00		
Smoking				-0.628	0.53
No	355	87	5.34±1.89		
Yes	53	13	5.51±1.85		
Drinking				-0.212	0.832
No	289	70.8	5.35±1.94		
Yes	119	29.2	5.39±1.75		
Family history				0.144	0.886
No	256	62.7	5.37±1.90		
Yes	152	37.3	5.34±1.85		
Dyslipidemia duration				1.359*	0.239
Under 6 months	21	5.1	5.07±2.05		
6~12 months	27	6.6	4.76±2.24		
1~2 years	61	15	5.36±1.66		
2~5 years	118	28.9	5.31±1.86		
5~10 years	120	29.4	5.36±1.94		
Above 10 years	61	15	5.81±1.76		
Kinds of lipid-regulating drugs				-0.565	0.573
1	381	93.4	5.34±1.90		
≥2	27	6.6	5.56±1.60		
Kinds of total drugs				-1.493	0.136
＜5	343	84.1	5.30±1.91		
≥5	65	15.9	5.68±1.69		
Abnormal liver function				1.131	0.259
no	367	90	5.39±1.86		
Yes	41	10	5.04±2.07		
Complicated with CHD				-2.153	0.032
No	253	62	5.20±1.94		
Yes	155	38	5.61±1.76		

Complicated with HT				-1.56	0.12
No	140	34.3	5.16±1.94		
Yes	268	65.7	5.46±1.84		
Complicated with DM				-0.514	0.608
No	275	67.4	5.32±1.90		
Yes	133	32.6	5.43±1.85		
Complicated with Cerebral Infarction				1.27	0.205
No	363	89	5.40±1.89		
Yes	45	11	5.02±1.78		
Complicated with renal diseases				-0.951	0.342
No	402	98.5	5.35±1.89		
Yes	6	1.5	6.08±1.13		
Complicated with mental diseases				1.452	0.147
No	393	96.3	5.38±1.86		
Yes	15	3.7	4.67±2.33		
Complicated with other diseases				1.036	0.301
No	328	80.4	5.41±1.89		
Yes	80	19.6	5.16±1.85		
Blood lipid control status				2.433	0.015
Not up to standard	323	79.2	5.24±1.88		
Reach the standard	85	20.8	5.80±1.82		
Note: *indicates F-value					

Table 1: Characteristics of patients with dyslipidaemia (n=408).

In this study, the adherence score of patients with dyslipidaemia according to the MMAS-8 scale was (5.36±1.88). The proportion of poor adherence was 59.8%, the proportion of moderate adherence was 29.7% and the proportion of good adherence was 10.5%.

The adherence evaluation of patients with dyslipidaemia in this study and the analysis of adherence question scores are shown in Tables 2 and 3.

Medication adherence	n	%
Poor	244	59.8
Moderate	121	29.7
Good	43	10.5
Total	408	100

Table 2: Medication adherence evaluation of patients with dyslipidaemia (n=408).

MMAS-8 questions	n（%）	Score
1. Do you sometimes forget to take your medication?		0.35±0.48
Yes	266 (65.2)	
No	142 (34.8)	
2. In the past 2 weeks, was there a day or days when you forgot to take your medication?		0.63±0.49
Yes	153 (37.5)	
No	255 (62.5)	
3. During treatment, when you feel worse or have other symptoms, do you reduce or stop taking your medication without telling your doctor?		0.79±0.41
Yes	86 (21.1)	
No	322 (78.9)	
4. Do you sometimes forget to carry drugs when you‘re traveling or have long been home?		0.68±0.47
Yes	129 (31.6)	
No	279 (68.4)	
5. Did you take your medicine yesterday?		0.80±0.40
Yes	327 (80.1)	
No	81 (19.9)	
6. Have you ever stopped taking your medication when you felt your disease was under control?		0.75±0.44
Yes	103 (25.2)	
No	305 (74.8)	
7. Do you think it is difficult to stick to the treatment plan?		0.64±0.48
Yes	147 (36.0)	
No	261 (24.0)	
8. Do you find it difficult to remember to take your medicine on time?		0.72±0.23
Never	113 (27.7)	
Now and then	170 (41.7)	
At times	95 (23.3)	
Frequently	28 (6.9)	
All the time	2 (0.5)	

Table 3: Scores of MMAS-8 questions (n=408, x ± s).

In this study, the total KAPscore of the patients was (24.19±8.33). Among them, knowledge score (14.50±7.00), belief score (6.60±1.58), behavior score (3.04±1.17), anxiety item score (3.25±3.32) and depression item score (3.17±3.17) of Hospital Anxiety and depression scale.

Single factor ANOVA analysis of variance was performed for different factors. The results of univariate analysis showed that the factors affecting the score of adherences with lipid-regulating drugs were: BMI, coronary heart disease, lipid knowledge, belief, behavior scores, anxiety and depression scores, and the differences were statistically significant (P<0.05).

Statistically significant indicators in the univariate analysis, as well as factors such as gender, age, occupation and payment form of medical expenses, were taken as independent variables, and adherence scores were taken as dependent variables into the multiple stepwise linear regression model with a test level of 0.05. Influencing factors of medication adherence score in patients with dyslipidaemia were described in Table 4.

	n	%	Adherence score	*t/F*	*P Value*
BMI (kg/m^2)				4.564*	0.004
<18.50	2	0.5	2.50±2.48		
18.50~<24.00	146	35.8	5.53±1.86		
24.00~<28.00	196	48	5.46±1.82		
≥28.00	64	15.7	4.74±1.94		
complicated with CHD				-2.153	0.032
No	253	62	5.20±1.94		
Yes	155	38	5.61±1.76		
K score					
0~17	264	64.7	5.08±1.89	4.095	0.000
18~29	144	35.3	5.86±1.77		
A score					
0~4	44	10.8	4.39±1.63	3.681	0.000
5~8	364	89.2	5.48±1.88		
P score					
0~3	265	65	4.91±1.76	6.953	0.000
4~5	143	35	6.19±1.82		
KAP score					
0~26	236	57.8	5.09±1.90	3.425	0.001
27~42	172	42.2	5.73±1.80		
A score of HADS					
0~7	364	89.2	5.47±1.83	6.054*	0.003
8~10	29	7.1	4.34±2.06		
11~21	15	3.7	4.67±2.13		
D score of HADS					

0~7	368	90.2	5.47±1.82	7.366*	0.001
8~10	24	5.9	4.13±2.16		
11~21	16	3.9	4.59±2.08		

Table 4: Influencing factors of medication adherence score in patients with dyslipidaemia (n=408).

Multiple stepwise linear regression analysis was conducted with adherence score as the dependent variable, and it was concluded that the influencing factors that significantly affected adherence were as follows: There were statistically significant differences in body mass index (β‘=-0.107), coronary heart disease (β‘=0.117), lipid knowledge level (β‘=0.141), behavior level to improve lipid control (β‘=0.305) and anxiety level (β‘=-0.111) (P<0.05). Body mass index and anxiety level were negatively correlated with adherence, while coronary heart disease, knowledge of blood lipids and behavior to improve blood lipid control were positively correlated. The patient‘s behavioral level has the greatest impact on adherence. Specific results were shown in Table 5.

Independent variable	Unnormalized coefficient		(95%*CI*)	*β‘*	*t*	*P Value*
	β	*SE*				
Constant	5.905	0.430	(5.059, 6.750)	-	13.734	0.000
BMI	-0.287	0.123	(-0.529, -0.046)	-0.107	-2.339	0.020
Co with CHD	0.454	0.179	(0.103, 0.805)	0.117	2.541	0.011
K level	0.556	0.182	(0.198, 0.914)	0.141	3.056	0.002
P level	1.203	0.182	(0.845, 1.560)	0.305	6.617	0.000
A level	-0.468	0.195	(-0.851, -0.085)	-0.111	-2.401	0.017
Note: R^2=0.167, adjusted R^2=0.157 ; F=5.469, P=0.000.						

Table 5: Multiple linear regression analysis of factors influencing medication adherence score in patients with dyslipidaemia (n=408).

Interview Findings

A total of 26 patients with dyslipidaemia were included, 19 of whom were interviewed face-to-face and 7 by telephone. There were 11 men and 15 women. The patients were (59.88±12.05) years old, the youngest was 30 years old, the oldest was 80 years old, 57.7% were under 60 years old, and 42.3% were 60 years old and above.

The proportion of different education level were: primary school and below 7.7%, secondary school 65.4%, junior college 15.4%, bachelor degree and above 11.5%. Summary of all interview results, transcribed and recorded non-verbal information, a total of more than 140,000 words. The data were analyzed by Colaizzi seven-step analysis method [17]. The specific reasons for poor adherence were statistically analyzed and refined, and summarized into four themes of patients‘ non-adherence reasons. Table 6 shows the topics and subcategories of qualitative interview.

Topics and subcategories	Frequency
Topic 1: Patient cognitive issues	
Poor understanding of disease and medication	22
Limited access to information and incomplete health education	10
Old age and poor memory	7
Poorly educated and illiterate	5
Topic 2: Patient attitude issues	
Worried about adverse drug reactions	19
Inner conflict of too many kinds and quantities of drugs	16
Do not understand the importance of disease treatment	12

Questioning the efficacy of drugs	8
Topic 3: Patient mental issues	
A clear history of anxiety and depression	11
The fast pace of city life, and patients' long-term tension	4
Family history of mental disorders, or family changes affect mental state	3
Topic 4: Others	
Action, distance matters	13
The impact of the COVID-19 pandemic	9
Family caregiver problem	8
High cost of drugs and the burden of treatment	7
Media, Internet or other channels to spread improper information	6
Special job reasons	4

Table 6: Topics and subcategories of qualitative interview (n=26).

Discussion

Summary of the main findings

Status of medication adherence in community patients with dyslipidaemia in Beijing Previous studies have found that low adherence rate and poor adherence of patients are common [18]. The patients with dyslipidaemia have a large population and a large base, but the current situation of management and control is not satisfactory. In particular, it is necessary to arouse the attention of general practitioners, patients, community health institutions and all sectors of society to further improve the adherence and treatment effect of patients with dyslipidaemia.

Strengths and Limitations

This study adopts the mixed research method, which is innovative, advanced and feasible. However, there are certain geographical limitations.

Comparison with Existing Literature

Reasons for non-adherence of patients with dyslipidaemia

Patient adherence is often influenced by patients themselves, doctors, families and society [19]. Patients with comorbidities, especially those with coronary heart disease, tend to pay more attention to their own health status, which is conducive to drug adherence, as described in the research conducted by Kim S [20] and Wang XB [21]. In the subjective aspect, patients‘ knowledge, beliefs and attitudes, psychological status such as whether they are in a state of anxiety and depression significantly affect patients‘ adherence, and also provide new ideas for general practitioners. For example, cognitive and mental status are the key factors affecting patients‘ adherence. If the patient‘s cognition of the disease and the drug is insufficient, the confidence in the treatment of the disease is insufficient or not enough attention is taken seriously, which often leads to irregular medication and non-standard treatment, then the adherence becomes poor. The score of patient adherence is closely related to the knowledge level, attitude and mental and psychological status of patients, which is consistent with the survey results by Rolnick SJ, et al. [22], mainly manifested as low knowledge level of patients, lack of cognition and improper attitude of patients significantly lead to poor medication adherence.

Through in-depth interviews with patients with dyslipidaemia, we learned that the background of patients is not the same, and the specific statements vary from person to person. After analyzing and refining the reasons for patients‘ non-adherence, it is believed that the reasons are mainly reflected in cognitive insufficiency, improper attitude, mental factors and other factors, and the cognitive and psychological factors of patients are the key factors affecting patients‘ adherence [23]. Patients have a lax and disappointed attitude towards long-term disease management and long-term drug use, and their anxiety about the efficacy and side effects of drugs is also a side manifestation of non-adherence, which needs to be paid more attention to, strengthen intervention and follow-up.

Significance of Patients‘ Cognitive and Psychological Factors on Adherence

Learning from the "knowing and believing model" theory, patients‘ knowledge and beliefs affect the level of adherence. This study indicates that the level of knowledge, belief and practice of patients with dyslipidaemia in community is generally low, and effective intervention is urgently needed. In terms of the cognition of diseases and drugs, only after patients understand the knowledge of diseases and drugs can they be treated and monitored in a standardized manner, so as to achieve the best effect

of medical advice adherence [24]. The existence of a driving force will promote the formation of new behaviors. Patients‘ cognition and attitude towards diseases and drugs are the basis to determine patients‘ adherence and cooperation with treatment. When applied to patients with dyslipidaemia, only by "convincing themselves" that they need to take medicine on time can they ensure adherence with their actual behavior and ensure long-term therapeutic effects in terms of their attitude toward disease and drug treatment. In short, only by changing the patient‘s "knowledge" and "belief", can we promote the "action" to change in the right direction and promote the improvement of adherence.

Recent studies have shown that [25] self-efficacy mainly plays its main role through four mediations of individual choice, cognition, motivation and emotion, while patients‘ self-efficacy and subjective initiative play a decisive role in the behavior of taking medication. Most patients‘ "self-efficacy" is not satisfactory, which affects the level of adherence. Therefore, improving patients‘ sense of self-efficacy, strengthening self-perception and cognitive ability, and optimizing the accumulation of successful experiences and failure lessons are conducive to improving patients‘ knowledge and behavior. In terms of the mental and emotional aspects of patients, patients attach importance to their physical conditions, show positive and confident attitude towards treatment, and are generally emotionally stable, which is more conducive to disease control and prevention [26]. In short, improving patients‘ mobility can further improve adherence. Enhancing patients‘ sense of self-efficacy may substantially improve patient adherence.

Interpretation

Strategies to improve patients‘ medication adherence

Optimize the management of patients themselves

Strengthen the physical fitness of patients and the management of complicated diseases, such as reasonable weight loss, delay the progression of diseases such as coronary heart disease. Improving the level of disease management of patients is not only reflected in the fact that patients can fully understand their own body, face up to their own health problems, and correctly treat personal disease management, but also in the ability to pay attention to and adhere to long-term drug treatment in daily life. Therefore, the focus of management is not only to strengthen the weight or waist circumference management of patients, but also to emphasize the change of patients‘ lifestyle, but also to strengthen the importance of disease and drug use, so that lifestyle changes including control diet, enhance exercise, etc., should be put into practice. In terms of disease management, patients with dyslipidemia should cooperate with medical staff, strengthen their understanding of their own diseases, reasonably control chronic diseases and their comorbidities, and do a good job of tertiary prevention of diseases. In addition, community health institutions providing door-to-door services, or vigorously carrying out Internet medical care [27], can improve the frequency of disease monitoring and patient return rate, and is also conducive to long-term and strict self-management of patients.

Improve the Knowledge Level of Patients

For patients with dyslipidaemia, it is recommended to increase the frequency of consultation on the use and dosage of drugs. Active learning of related diseases and drug use knowledge can strengthen one‘s own cognitive level, which is the basis of rational drug use. For general practitioners, they should explain clearly how to use drugs in outpatient clinics, ask patients relevant knowledge in time to test and strengthen the effect of guidance, and often give phone guidance on drug use, and strengthen follow-up efforts such as phone calls and text messages. It can provide clinical pharmaceutical intervention [28], increase the drug knowledge reserve of patients, and thus improve the clinical effect of lipid-regulating drugs. Strengthen online and offline health education through a variety of ways, including lectures in the community, lectures in the WeChat group, etc., and make reasonable use of text, pictures and video education to improve patients‘ cognition.

Improving the Patient‘s Mobility

In order to improve the patient‘s action ability, the patient should be promoted from the motivation of tending to health, and the disease management should be improved in a planned and persistent manner. Patients should take medicine regularly and on time. In daily life, keep a daily record of drug taking log, or use the way of drawing pictures and lists to remind, you can set up an alarm clock to remind you to take medicine at a fixed time. Support can also be provided at the family level to improve patients‘ mobility, such as family members changing diet and meal times together, exercising together, and losing weight together. Family members have regular medical check-ups, supervise each other to take medication on time and in accordance with the amount, and assist in making appointments for general or specialist clinics.

Improving the Psychological Condition of Patients

Optimizing the psychological conditions of patients can provide a good basis for the change of behavior. In order to improve the adherence of patients, we should improve the mental and psychological conditions of patients. Enhancing patients‘ sense of self-efficacy can improve patients‘ perception of self-ability, subject self-grasp and feelings, strengthen patients‘ belief in behavior change, and further promote the improvement of adherence.

For patients themselves, they should take the initiative to adjust their emotions, maintain a good mood, and improve their quality of life and treatment effect. General practitioners should be willing to assume the responsibilities of family physicians and enhance patients‘ confidence and sense of belonging in treatment. General practitioners should carry out appropriate psychological counselling for patients with dyslipidaemia to help patients stabilize their psychological state. In addition, family members can provide patients with appropriate comfort and psychological support to promote improved adherence. If community conditions permit, it

is also an effective way to provide psychological treatment and intervention in the community with a psychologist or psychiatrist.

Conclusions

The awareness of lipids and control rate of dyslipidaemia patients in Beijing community are low, and lipid-regulating drugs adherence is poor. Patients' body mass index, complications and their knowledge, behavior level and psychological status are important factors affecting medication adherence.

In order to effectively improve patient medication adherence, community management of patients with dyslipidaemia should be optimized, patients' knowledge level, attention degree and action ability should be enhanced, and the psychological status of patients be improved.

Disclosure Statement

Conflict of Interest: There is no conflict of interest in this article.

Availability of Data and Material

All data generated or analysed during this study are included in this published article.

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Author Contributions Statement

LTZ wrote the main manuscript text. JY made great efforts to the research proposal and study supervision. MXH exercised quality control over the research. LTZ, ZFY, XW, LHX, ZH, ZH and XM collected data and participated in project completion. All authors reviewed the manuscript.

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