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# Mediating effect of dietary self-efficacy in the relationship between health literacy and nutrition label use among coronary heart disease patients

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**Nutrition label use among patients with coronary heart disease (CHD) is limited. This study aims to investigate the mediating effect of dietary self-efficacy on the relationship between health literacy and nutrition label use in CHD patients. This cross-sectional study recruited 350 CHD patients using convenience sampling from two hospitals in Changsha City. Data were collected using a general information questionnaire, the Newest Vital Sign Scale, the Cardiac Diet Self-efficacy Scale, and the Nutrition Label Use Questionnaire. SPSS 25.0 was used for Pearson correlation analysis and multiple linear regression analysis, while Model 4 in the SPSS macro program PROCESS was applied for mediation effect analysis. The results indicated health literacy and dietary self-efficacy were positively and significantly correlated with nutrition label use in CHD patients ($P < 0.001$). Bootstrap test results demonstrated that dietary self-efficacy partially mediated the relationship between health literacy and nutrition label use, with a mediation effect of 0.184 (95% CI: 0.144–0.225), accounting for 55.42% of the total effect. In conclusion, dietary self-efficacy mediates the relationship between health literacy and nutrition label use in CHD patients. Targeted interventions that address both health literacy and dietary self-efficacy are crucial for improving nutrition label use among CHD patients.**

**Keywords** Coronary heart disease, Nutrition label, Dietary self-efficacy, Health literacy, Mediating effect

The World Health Organization (WHO) recommends the use of nutrition labels as a crucial tool in dietary management. Nutrition labels are informational content on food packaging that elucidates the nutritional components and characteristics of the food product. These labels accurately and directly present essential nutritional information, facilitating comparisons among similar food items and enabling individuals to make prompt, health-conscious choices[1]. Research has shown that the use of nutrition labels is associated with healthful food selection behavior[2]and the formation of positive dietary habits. Furthermore, nutrition labels decreased individual energy intake by 6.6%, total fat intake by 10.6%, and increased vegetable consumption by 13.5%[3], while also reducing the occurrence of metabolic syndrome[4]. In addition, nutrition labels serve as a cost-effective and beneficial measure[5]. Dietary management also plays a critical role in the comprehensive care of patients with coronary heart disease. The risk factors for coronary heart disease encompass hyperglycemia, hypertension, hyperlipidemia, and obesity, all of which are closely associated with dietary habits. Dietary management can effectively slow the progression and recurrence of CHD, while also playing a positive role in controlling risk factors[6]. However, the rate of nutrition label use among CHD patients in China remains low. Our research team previously conducted a survey of 998 patients with coronary heart disease and found that only 0.8% of the patients always used nutrition labels, and 4.6% frequently used them[7]. Hence, it is crucial to explore the factors influencing the use of nutrition labels in patients with coronary heart disease.

Previous studies have found a correlation between health literacy and nutrition label use in individuals[8–10]. Health literacy refers to an individual's ability to comprehend and master health information, and utilize this capacity for the maintenance and promotion of one's own health[10]. This association between health literacy and

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nutrition label use has been observed not in adults but also in minors. For instance, one study reported that adolescents with lower health literacy demonstrated significantly reduced rates of food label use compared to those with high health literacy[8]. Similarly, Choi et al.[9] conducted a survey involving 166 middle-aged individuals and found that health literacy could enhance the correct utilization of nutrition label information. However, the relationship between health literacy and nutrition label use behavior in patients with CHD remains unclear. Moreover, previous research has not explored whether health literacy may be potentially indirectly associated with the utilization of nutrition labels through other mediators.

Several psychological factors mediate the relationship between health literacy and healthy behaviors, with self-efficacy being one of the most extensively studied variables[11,12]. Liu et al.[11] demonstrated that self-efficacy serves as a mediator between health literacy and quality of life, while Du et al.[12]found that self-efficacy mediates the relationship between health literacy and a health-promoting lifestyle among older adults. As a central concept in Bandura's Social Cognitive Theory, self-efficacy is defined as an individual's confidence in their ability to perform behaviors to achieve the desired result[13]. This theory posits that self-efficacy is a crucial factor directly influencing behavior and plays a central role in personal behavioral change[13]. Consistent with this theory, empirical studies have reported a positive correlation between self-efficacy and healthy eating behaviors[14,15]. However, research exploring the relationship between dietary self-efficacy and the use of nutrition labels remains limited. To date, only Cha et al.[8]have investigated this connection, demonstrating that dietary self-efficacy predicts food label use among young adults aged 18–29. These findings suggest that dietary self-efficacy may serve as a significant 'bridge' (i.e., mediating variable) between health literacy and the use of nutrition labels. Nevertheless, existing studies[8,9,14,15] have primarily examined the relationships among health literacy, dietary self-efficacy, and nutrition label use in isolation. The interconnections among these three variables remain unexplored, highlighting the need for further research to address this gap.

Therefore, this research explores the relationship between dietary self-efficacy and the use of nutrition labels in patients with coronary heart disease, addressing the gap in the existing literature. Based on prior research, we have formulated three hypotheses: (1) Health literacy is directly associated with nutrition label use in patients with CHD; (2) Dietary self-efficacy is directly associated with nutrition label use in CHD patients; (3) Dietary self-efficacy serves as a mediating factor in the relationship between health literacy and the use of nutrition labels in patients with CHD.

## Methods

### Participates and procedure

This cross-sectional study was conducted at two hospitals in Changsha City between October 2022 and January 2023. Ethical approval for this study was obtained from the Ethics Committee of the Second Xiangya Hospital prior to its commencement, with Ethics Approval No. (2020) and Lunshen No. (Yan649). During the survey, our staff first communicated with the head of cardiovascular medicine and obtained approval. Subsequently, the investigators recruited inpatients with coronary heart disease (CHD) through convenience sampling. The inclusion criteria were as follows:① Diagnosis of coronary heart disease based on the American College of Cardiology and American Heart Association guidelines[16], with a disease duration of ≥3 months; ② Age≥18 years. Exclusion criteria included patients with severe complications such as heart failure. All participants were informed of the study's objectives, the anonymity and confidentiality of the data, their right to withdraw at any time without consequence, and the intended use of the results. They also signed an informed consent prior to filling out the scale. The sample size was determined based on two criteria. First, according to the Kendell sample size estimation method, the recommended sample size should be at least 5 to 10 times the number of variables, with a preferred ratio exceeding 15 times[17]. In this study, a sample size of 15 times the number of variables was employed, taking into account an 80% questionnaire qualification rate, resulting in a calculated sample size of 244 cases. Second, the sample size was also determined through Monte Carlo power analysis for indirect effects, a well-established method for assessing statistical power in mediation analyses[18]. Using a validated computational tool (https://schoemanna.shinyapps.io/mc_power_med/), the simulation was carried out with the following parameters: (1) a single-mediator path model, (2) a target statistical power of 0.80, (3) total sample size as the primary optimization parameter, and (4) path coefficients derived from Du et al.'s experimental data[12]. The simulation results indicated that a minimum sample size of 208 participants would be required to achieve adequate power ($\beta = 0.80$) to detect mediated effects under the specified model parameters. After accounting for an 80% questionnaire qualification rate, the final sample size was determined to be 260 cases. As a result, a total of 350 questionnaires were administered. Participants independently completed the surveys, with a completion time of approximately 20 min. Upon completion of the participants' questionnaires, researchers conducted on-site verification, addressing omissions or ambiguities by promptly confirming and supplementing information with participants. Data with excessively short completion times or overly regular response patterns were excluded from the analysis. During the data processing phase, rigorous data cleaning and verification procedures were implemented to ensure data quality. First, Data were verified through double-entry verification, achieving 100% concordance rate between original and validated datasets. Second, Inspection of the study variables revealed low amounts of missing data across variables and Little's Missing Completely at Random test indicated data was missing at random, Missing data was replaced with the mean value within each variable. Finally, outlier detection was performed using boxplot visualization and standardized Z-scores, with extreme values winsorized to preserve sample size. A total of 323 questionnaires were deemed valid, yielding an effective recovery rate of 92.3%. The study was performed in accordance with the principles of the Declaration of Helsinki.

## Measures

*Socio-demographic characteristics*

A self-designed questionnaire was used to collect socio-demographic variables, including gender, age, education level, marital status, living conditions, average monthly household income, smoking status, alcohol consumption, duration of coronary heart disease, and the presence of comorbid diabetes.

*The Newest Vital Sign (NVS)*

This study utilized the Newest Vital Sign (NVS) Scale to assess the health literacy of patients with coronary heart disease. The NVS, developed by Weiss et al. in 2005[19], is a brief health literacy measurement tool. It provides an objective measure of an individual's ability to interpret both textual and numerical information. The scale has been widely used across various populations, including older adults[20], hospital patients[21], obstetrical patients[22], individuals with HIV[23], and those with heart failure[24]. The NVS consists of an ice cream nutrition label and six items, requiring responses based on the nutritional information provided on the ice cream label. This instrument is utilized to assess abilities related to reading and comprehending textual and numerical information. For example, the first item is, 'If you consume the entire box of ice cream, how many calories will you intake?' All items are scored on a binary scale, with correct responses assigned 1 point and incorrect responses receiving 0 points, resulting in a total score ranging from 0 to 6. A higher score indicates a greater level of health literacy[19]. The Chinese version was translated by Wang et al.[25]and administered to 3754 Chinese individuals. Confirmatory factor analysis demonstrated strong psychometric properties with a Comparative Fit Index of 0.987, a Normed Fit Index of 0.985, the Root Mean Square Error of Approximation of 0.051, and the Standardized Root Mean Square Residual of 0.021. Additionally, the Cronbach's α coefficient was 0.748, and the test-retest reliability was 0.685, indicating satisfactory reliability and validity[25]. Thus, the NVS is a reliable and valid instrument for assessing health literacy among Chinese individuals. In the present study, the Cronbach's α coefficient for this scale is 0.819.

## The cardiac diet Self-Efficacy scale (CDSE)

The CDSE, developed by Hickey-Owen and Froman[26]based on Bandura's self-efficacy theory[13], is designed to measure individuals' self-efficacy in healthful dietary behaviors. It assesses whether individuals have the necessary skills to enhance confidence in healthy eating behaviors. The psychometric properties of the CDSE have been shown to be robust, with high internal consistency (α = 0.9), test-retest reliability (r = 0.86), and a moderate correlation with diet goal attainment (r = 0.62). This instrument is commonly applied in cardiac patient populations[27,28]. The Chinese version of CDSE scale was translated by Chen et al.[29]. The scale consists of 16 items, each rated on a Likert-5 scale where 1 represents 'Very Little Confidence' and 5 represents 'Very High Confidence.' The sum of scores for each item yields the scale's total score, ranging from 16 to 90. Higher scores indicate a stronger sense of dietary self-efficacy, reflecting greater confidence in adopting healthful dietary behaviors. The scale has demonstrated high internal consistency (Cronbach's α = 0.89–0.92) and test-retest reliability (0.86)[30]. In this study, the scale's Cronbach's α is 0.939.

## The nutrition label use questionnaire

Referring to the study by Xazela et al.[31], nutritional label use was assessed using a single item, specifically, "Do I consistently use nutrition labels when selecting food?" Responses were graded on a 5-point Likert scale, with values ranging from 1 to 5. These values respectively denote almost no use, occasional use, intermittent use, frequent use, and constant use.

## Statistical analysis

SPSS 24.0 software was used for the statistical analysis of the data. First, we performed descriptive statistics on demographic variables and main analysis variables. Mean ± standard deviation was employed to describe continuous variables, while frequency and component ratio were utilized for categorical variables. Second, we performed Pearson correlation analysis to examine the relationships between health literacy, cardiac diet self-efficacy, and nutrition label use behavior. Third, The effects of health literacy and cardiac diet self-efficacy on nutrition label use were analyzed by multiple linear regression. Finally, to verify our hypotheses, we used the PROCESS macros (Model 4) in SPSS to examine the mediating effect of cardiac diet self-efficacy on health literacy and nutrition label use, employing the Bootstrap method for hypothesis testing. 5000 bootstrap resampling iterations were conducted to evaluate model fit and estimate 95% confidence intervals. Relationships were considered significant if the 95% confidence interval did not include zero. A significance level of $P < 0.05$ was considered statistically significant.

# Results

## Demographic characteristics of participants

The demographic characteristics were summarized in Table 1.

## The scores and pearson correlation analysis of health literacy, CDSE, and nutrition label use

The scores for health literacy, CDSE, and nutrition label use in patients with coronary heart disease were (2.167 ± 1.680), (44.046 ± 12.122), and (1.76 ± 0.934), respectively. The number of individuals scoring 1 to 5 points on the nutrition label usage questionnaire were as follows: 166 cases (51.4%), 88 cases (27.2%), 51 cases (15.8%), 16 cases (5.0%), and 2 cases (0.6%). The Pearson correlation analysis results indicated that health literacy of CHD patients was positively correlated with CDES ($r = 0.536$, $P < 0.001$), positively correlated with nutrition label use ($r = 0.598$, $P < 0.001$), and CDES was positively correlated with nutrition label use ($r = 0.762$, $P < 0.001$).

| Variables | Frequency(*n*) | Percent |
|---|---|---|
| **Gender** | | |
| Male | 146 | 45.2 |
| Female | 177 | 54.8 |
| **Age** | | |
| <45 | 17 | 5.3 |
| 45∼<60 | 132 | 40.9 |
| ≥ 60 | 174 | 53.9 |
| **Education** | | |
| Primary school or below | 113 | 35.0 |
| Middle school | 96 | 29.7 |
| High school | 98 | 30.3 |
| University or higher | 16 | 5.0 |
| **Marital status** | | |
| With partner | 293 | 90.7 |
| Without partner (Unmarried, Divorced, Widowed) | 30 | 9.3 |
| **Living arrangement** | | |
| Residing with family | 308 | 95.4 |
| Living alone | 15 | 4.6 |
| **Per capita income** | | |
| Low(< RMB1,3389) | 92 | 28.5 |
| Middle(RMB1,3389-6,5393) | 180 | 55.7 |
| High (> RMB6,5393 ) | 51 | 15.8 |
| **Smoking status** | | |
| Never smoked | 205 | 63.5 |
| Former smoker | 61 | 18.9 |
| Current smoker | 57 | 17.6 |
| **Alcohol consumption status** | | |
| Non-drinker | 261 | 80.8 |
| Former drinker | 33 | 10.2 |
| Drinker | 29 | 9.0 |
| **Coronary Heart Disease Course** | | |
| <1 years | 110 | 34.1 |
| 1∼<5 years | 119 | 36.8 |
| 5∼<10 years | 61 | 18.9 |
| ≥ 10 years | 33 | 10.2 |
| **Presence of Diabetes** | | |
| No | 205 | 63.8 |
| Yes | 117 | 36.2 |

**Table 1**. Demographic characteristics of participants with coronary heart disease ($n = 323$).

| Variable | B | SE | beta | t-value | *P*-value |
|---|---|---|---|---|---|
| Constant | −0.660 | 0.122 | — | −5.411 | **<0.001** |
| Health literacy | 0.148 | 0.022 | 0.266 | 6.607 | **<0.001** |
| Diet self-efficacy | 0.048 | 0.003 | 0.620 | 15.404 | **<0.001** |

**Table 2**. Multiple linear regression analysis of factors influencing nutrition label use in CHD patient ($n = 323$). Note: $R^2 = 0.631$,adjusted $R^2 = 0.629$,$F = 273.510$,$P<0.001$.

## Regression analysis of health literacy, CDSE, and nutrition label use in CHD patients

Conducted multiple linear regression analysis using the nutrition label use score of CHD patients as the dependent variable and the statistically significant NVS score and CDSE score as independent variables. The results indicated that health literacy ($\beta = 0.266$, $P < 0.001$) and diet self-efficacy ($\beta = 0.620$, $P < 0.001$) both entered the regression equation, collectively explaining 63.1% of the variance in nutrition label use (Table 2).

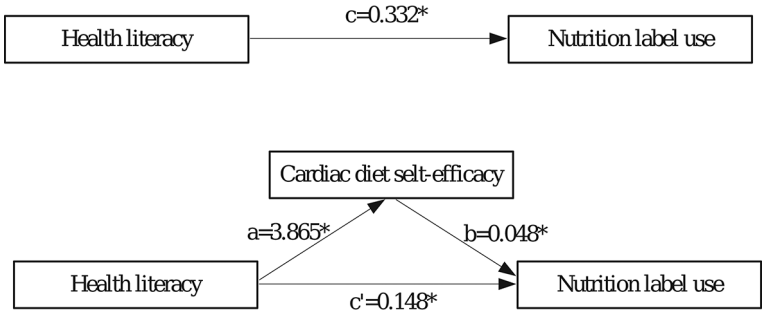


**Fig. 1**. Diagram of the mediation effect model.

| Effect relationship | Effect size | Std.Error | LLCI | ULCI | Utility percentage |
|---|---|---|---|---|---|
| Total effect | 0.332 | 0.025 | 0.283 | 0.381 | / |
| Direct effects | 0.148 | 0.022 | 0.104 | 0.192 | 44.58 |
| Indirect effects | 0.184 | 0.021 | 0.144 | 0.225 | 55.42 |

**Table 3**. Results of the bootstrap mediation effect test ($n = 323$).

## Mediation analysis

The PROCESS Model 4 (consistent with the theoretical hypothesis of this study) in the SPSS macro developed by Hayes[32] was employed to investigate the mediating effect of diet self-efficacy between health literacy and nutrition label use. In the analysis, the bias-corrected percentile Bootstrap method was used to test for mediation effects, and a Bootstrap 95% confidence interval excluding 0 indicates a significant mediation effect. The results indicated that the total effect (path c) between health literacy and nutrition label use was 0.332 (95% confidence interval [CI]: 0.283–0.381). The coefficient for the relationship between health literacy and cardiac diet self-efficacy (path a) was 3.865 (95% CI: 3.566 to 4.325), while the coefficient between cardiac diet self-efficacy and nutrition label use (path b) was 0.048 (95% CI: 0.043 to 0.052). The indirect effect (a × b) was 0.184 (95% CI: 0.144 to 0.225), which was statistically significant. The direct effect (path c') between health literacy and nutrition label use was 0.148 (95% CI: 0.109–0.181). The proportion of the indirect effect relative to the total effect, calculated as (a × b) / c = 0.184 / 3.865 = 55.42%, suggests that cardiac diet self-efficacy serves as a partial mediator between health literacy and nutrition label use (see Fig. 1; Table 3 for further details).

## Discussion

This study represents the first investigation within the CHD population examining the relationships among health literacy, dietary self-efficacy, and nutrition label use. The findings substantiate our research hypothesis: health literacy and dietary self-efficacy exert a direct influence on nutrition label use in individuals with CHD. Moreover, health literacy indirectly impacts nutrition label use through its influence on dietary self-efficacy.

The results of this survey indicate that the NVS scores among CHD patients were low, suggesting a limited capacity to acquire, comprehend, evaluate, and apply health information. This finding aligns with the NVS scores reported by Tseng[33]for individuals with type 2 diabetes in Taiwan but is lower than those observed among general outpatients[34]or the general population[35], highlighting variability in health literacy across different populations. Similarly, the CDSE scores in this study population were slightly lower than those reported for the Taiwanese community by Chen et al.[29]and for diabetes patients in Harbin, China, by Yang[15]. As self-efficacy is influenced by personal factors such as age and education level, as well as environmental factors including barriers to behavior change and social support[13,15]. The lower CDSE scores observed in our study suggest a lack of confidence among participants in adopting and maintaining healthy dietary behaviors. Furthermore, 51.4% of the participants reported not using nutrition labels, a finding consistent with prior research indicating a 59.6% of not utilization rate[10]. These findings suggest that the use of nutrition labels remains suboptimal in China. Pfledderer's study found that the rate of nutrition label use was significantly and positively associated with the consumption of healthy foods[36]. And Ollberding[37] reported that individuals aiming to adjust their dietary intake are more inclined to read nutrition labels when selecting food. Thus, implementing targeted interventions to enhance the use of nutrition labels among Chinese patients with CHD is crucial.

The results indicated a positive correlation between health literacy and nutrition label use in CHD patients, aligning with findings from previous research[9,38]. However Malloy-Weir's scoping review identified inconsistent and, in some cases, contradictory empirical relationships between health literacy and nutrition label use[39]. These discrepancies may be attributed to several factors, including differences in study design, sampling methods, and sample characteristics, as well as inconsistencies in the measurement of health literacy and nutrition label use across studies. Additionally, differences in the type of nutrition label information examined (e.g., front-of-pack versus back-of-pack labels) likely contribute to the observed variability. This study focused on examining nutrient reference values, a type of back label commonly used in China. To assess health literacy,

This study employed the NVS instead of alternative tools such as the Chinese Health Literacy Scale for Low Salt Consumption[40], due to its widespread use and capacity to facilitate cross-study comparisons[41]. The NVS also offers practical advantages, including fewer items and a short administration time of approximately three minutes, which reduces participant fatigue and the risk of disengagement. Additionally, the scale incorporates nutrition labels, enhancing its appeal and comprehension for participants, and aligning with the thematic focus of this study. Based on the association between health literacy and nutrition label use, we propose the development of simplified, visually-oriented educational tools that incorporate real-world food packaging comparisons, such as differentiating between low-sodium and regular soy sauce labels. These materials could be integrated into disease self-management in clinical practice, enabling patients to practice label interpretation under guided supervision. Future implementation efforts should account for varying literacy levels, with ongoing evaluation of nutrition label use behavior changes.

Cardiac diet self-efficacy was significantly positively correlated with nutrition label use. This study, for the first time, validated the relationship between the two factors in the CHD population, utilizing a specialized diet self-efficacy scale designed for cardiac patients. Previously, Cha et al.[8]conducted a study on adolescents aged 18–29 and found that self-efficacy was related to food label use. Cha used the Weight Efficacy Lifestyle Questionnaire to evaluate self-efficacy related to dietary behavior. In this study, considering the characteristics of the subjects, the Cardiac Diet Self-Efficacy scale was chosen. The items of CDSE are tailored for coronary heart disease (CHD) patients, such as "Decreasing the amount of fat and cholesterol in my diet," "Increasing the amount of fiber and vegetable in my diet," and "Limiting the number of egg yolks I eat in a week."[26] The results of this study confirm the role of dietary self-efficacy in nutrition label use. Higher dietary self-efficacy is associated with increased confidence in consistently using nutrition labels in various situations. Building on this finding, we propose the implementation of goal-setting workshops in which patients set achievable weekly objectives. Motivational interviewing techniques can be used to address barriers to behavior change. Additionally, pairing patients with low cardiac diet self-efficacy with peer mentors who have successfully adopted label-reading habits can leverage social cognitive theory to enhance confidence.

The mediation effect model indicates that health literacy can directly influence nutrition label use and can also indirectly impact nutrition label behavior through dietary self-efficacy. Multiple studies[42,43]have found that self-efficacy is a crucial mediating variable in the relationship between health literacy and outcome variables, including self-management ability and medication adherence. This study focused on nutrition label use in CHD patients as the outcome variable and also verified the mediating role of self-efficacy. According to Bandura's self-efficacy theory[13], the key to individual behavior change is enhancing self-efficacy through various means. Self-efficacy serves as the intrinsic driving force for altering external behaviors, acting as an intermediary factor in psychological and physiological coping mechanisms and positive health behavioral responses. Enhancing self-efficacy through health literacy may be attributed to several factors. CHD patients with higher health literacy exhibit advanced literacy and numeracy skills, enabling them to access a greater amount of health information. This increased knowledge fosters confidence in patients regarding the dietary management process and outcomes, resulting in a heightened sense of dietary self-efficacy. Moreover, individuals with higher health literacy tend to have clearer and more accurate perceptions of disease, facilitating active engagement in health behavior management and contributing to an increased sense of self-efficacy[44]. Therefore, interventions aimed at promoting nutrition label use among CHD patients should address both health literacy and dietary self-efficacy, as this approach may result in more effective outcomes. In addition, the results of this study demonstrate that dietary self-efficacy partially mediates the relationship between health literacy and nutrition label use. This suggests that, aside from dietary self-efficacy, there may be other variables playing a mediating role between health literacy and the behavior of using nutrition labels. Consequently, further exploration is needed to understand the underlying mechanisms of how health literacy influences nutrition label use.

A major strength of our study is that it is the first to investigate the relationship between cardiac diet self-efficacy, health literacy, and nutrition label use among patients with coronary heart disease. It is also the first to examine cardiac diet self-efficacy as a mediating factor between health literacy and nutrition label use. Furthermore, health literacy and self-efficacy were assessed using appropriate, validated scales. The NVS scale, which involves reading a nutrition label and answering six related questions, is particularly well-suited to the focus of this study on nutrition label use. To assess self-efficacy, the CDSE questionnaire was used, specifically designed for patients with coronary heart disease. However, our study has several limitations. Firstly, This study employs a cross-sectional design and focuses solely on mediation variables without addressing their causal effects. Consequently, establishing definitive causal relationships falls outside the scope of this investigation. Future research utilizing prospective cohort studies may be able to confirm the causal relationships between these variables. Secondly, all primary data in this study were self-reported, which may have subjective biases. Future research could utilize multi-modal and multi-dimensional data collection methods to mitigate potential response biases and consider the use of eye-tracking technology, as employed in Graham's study[41], to objectively evaluate nutrition label use. Lastly, the findings may be prone to selection bias due to the use of convenience sampling. As a non-probability sampling method, convenience sampling prioritizes participant accessibility over randomization, thereby introducing inherent risks of selection bias. The resultant dataset may exhibit limited external validity due to potential geographic or temporal constraints in sample recruitment, restricting the generalizability of findings to broader populations[45]. Future research should conduct large-scale, multicenter surveys to enhance the external validity of the results.

## Conclusions

This study reveals the relationship between health literacy and nutrition label use among patients with coronary heart disease, and examines the mediating role of dietary self-efficacy in this association. These findings provide a new perspective on the relationships and underlying mechanisms among these variables, emphasizing the

potential roles of health literacy and dietary self-efficacy in promoting the use of nutrition labels among CHD patients.

## Data availability

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

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## Author contributions

Lu Pan: Conceptualization, Methodology, Project administration, Investigation, Formal analysis, Writing - original draft, Writing—review and editing. Caixia Xie: Conceptualization, Methodology, Project administration. Mengjiao Liu: Methodology, Formal analysis, Investigation. Lihui Zhu: Formal analysis, Investigation. All authors have read and agreed to the published version of the manuscript.

## Declarations

## Competing interests

The authors declare no competing interests.

## Additional information

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