

Research Article

Can Health Literacy in Patients with Chronic Atrophic Gastritis Improve the Ability to Identify Rumors? A Cross-sectional Study

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Abstract

Objective: To examine the connection between rumor recognition and health literacy in people with chronic atrophic gastritis (CAG).

Methods: In this study, a cross-sectional design was employed. From May 6, 2020 to January 24, 2021, a total of 10 hospitals in each of the 5 major administrative regions of East China, North China, Central China, South China, and Northwest China were used as survey sites, and researchers were recruited to intercept CAG patients for questionnaire surveys through convenience sampling. We collected data using a self-designed questionnaire based on the functional, communicative, and critical health literacy and anti-rumor platforms. The *t*-test, analysis of variance, Pearson correlation analysis, and multiple stepwise linear regression analysis were all performed using SPSS 26.0.

Results: A total number 602 valid samples were obtained in this study. CAG patients had a health literacy score of 51.07 ± 11.03 . For patients with CAG, the rumor recognition ability score was 8.44 ± 2.95 , with a mean correct rate of 52.8%. There were statistical differences in the ability to read rumors among patients with atrophic gastritis by place of residence ($P < 0.01$), age ($P < 0.001$), nation ($P < 0.001$), marital status ($P < 0.05$), and level of health literacy ($P < 0.001$). Patients had a weak positive link between health literacy and rumor recognition, according to Pearson correlation analysis ($r = 0.236$, $P < 0.01$). After adjusting for the nation, marital status, residence, and age, multiple stepwise linear regression analysis revealed that the capacity of patients to read rumors increased with increasing levels of functional health literacy ($\beta = 0.136$, $P < 0.001$) and critical health literacy ($\beta = 0.195$, $P < 0.001$).

Conclusion: This study found CAG patients had lower rumor recognition, and that critical health literacy had a stronger positive effect on their rumor recognition after adjusting for demographic correlations. The

use of targeted interventions is recommended to increase critical health literacy and lessen the harmful effects of rumors.

Keywords: chronic diseases, health literacy, rumor recognition, disinformation

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1 INTRODUCTION

Chronic atrophic gastritis (CAG) is a common chronic inflammatory disease of the digestive system, characterized by repeated damage to the epithelium of the gastric mucosa, leading to atrophy and reduction in the number of intrinsic gastric glands, with or without intestinal epithelial metaplasia, and is recognized by the World Health Organization as a precancerous lesion^[1]. Epidemiological data show that the prevalence of CAG increases with age, and about 0.1% to 0.25% of CAG may progress to gastric cancer^[2]. The development of CAG is significantly related to the level of disease awareness, psychological status, and health behavior of the individual^[3].

The internet has gradually become the primary source for people to obtain health information. It is worth noting that the health information widely disseminated on the internet is not always credible health knowledge, but also contains some health rumors, which may cause patients to misunderstand important information related to CAG and delay the diagnosis or treatment^[4]. Some effective measures to limit the negative impacts of health rumors have been suggested in previous literature, these include strengthening relevant law enforcement agencies, disseminating facts to counterrumors, and improving the public's ability to identify the accuracy of various information, i.e. rumor recognition ability^[5].

Studies have shown that health literacy can assist the public in recognizing the falsity of health rumors and avoiding their consequences^[6]. Health literacy is widely considered to represent "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions^[7]." Nutbeam^[8] gave an insight into the meaning of health literacy, noting that it can be classified into three levels: functional health literacy, communicative health literacy, and critical health literacy. Functional health literacy is defined as having adequate literacy skills that can be used effectively in daily life; communicative health literacy is considered to be a more advanced cognitive and literacy skill related to social skills, acquiring and applying the information to manage health conditions; critical health literacy is also an advanced cognitive skill related to social skills, which is noted as being able to use critical thinking to analyze health information and apply it to daily life^[8]. Previous studies have shown that improving health literacy is important for improving health

outcomes in patients with chronic diseases such as diabetes^[9], cardiovascular disease^[10], and chronic obstructive pulmonary disease^[11]. CAG is also a chronic disease related to an individual's behavior and lifestyle^[12]. Individuals with higher health literacy are more likely to establish healthy behaviors and lifestyles^[13]. However, there still is a lack of knowledge about whether health literacy is effective in helping people with CAG to identify CAG-related health rumors and which level of health literacy is most important for people with CAG to be able to distinguish rumors. We hypothesize that for people with CAG, rumor recognition can be improved by promoting health literacy, which in turn increases prevention and control of the disease, and that critical health literacy is most closely related to rumor-recognition skills. Patients with CAG were recruited for this study in order to better understand the relationship between rumor recognition and health literacy in patients with CAG, and to provide a basis for improving patients' ability to recognize rumors, adopt healthy behaviors and lifestyles, and delay or prevent the progression of CAG.

2 MATERIALS AND METHODS

2.1 Sample

The study population consisted of patients with CAG. Inclusion criteria: (a) Patients who met the endoscopic and histopathological diagnostic criteria for CAG in the Chronic Gastritis Primary Care Guidelines (2019)^[14]; (b) Patients who were willing to cooperate with the investigation and sign the informed consent form. Exclusion criteria: (a) Patients with cognitive or psychiatric disorders; (b) Patients with serious diseases of the heart, liver, kidney, and other organs.

2.2 Procedure

This study is a cross-sectional study, using a convenience sampling method, 1-2 provinces (autonomous regions and municipalities directly under the central government) were selected in 5 major administrative regions of China: Shandong Province in East China, Beijing and Shanxi Province in North China, Henan Province and Hubei Province in Central China, Guangdong Province in South China, Shaanxi Province, and Xinjiang Province in Northwest China. A total of two hospitals were selected from each city in each of the selected provinces, so that there were two hospitals in each administrative region where surveyors could be recruited for training and to distribute survey questionnaires. The investigators received standardized training, and after

self-introduction and clarification of the study objectives, CAG patients who had just received medical checkups or consultation services were randomly intercepted at each survey site using an electronic version of the questionnaire to conduct the survey. The investigators obtained the patients' consent and signed an informed consent form prior to the survey, using a standardized instructional language, which was filled in by the investigators after questioning them individually. The questionnaires were checked on site and any gaps were then communicated with the patient to fill in the gaps. After the questionnaires were collected, logic checks and data screening was carried out to remove questionnaires with an answer time of <120s and those with inconsistent logic. The study subjects gave informed consent and the study was approved by the ethics committee (JKWH-2020-10). A total of 680 questionnaires were distributed and 652 questionnaires were collected between May 6, 2020 and January 24, 2021, with a return rate of 95.9%, and the final analysis included 602 questionnaires with a validity rate of 88.5%. Details are shown in [Figure 1](#).

2.3 Measurements

2.3.1 General Demographic and Sociological Characteristics

This section covers gender, residence, age, occupation, educational background, ethnic group, marital status, per capita monthly household income, smoking status, and alcohol consumption.

2.3.2 Functional, Communicative, and Critical Health Literacy

Referring to the scale developed by Ishikawa et al.^[15] in Japan and Chineseized and revised by Zhang et al.^[16] to measure the health literacy of patients with chronic diseases, the health literacy of CAG patients was assessed in 3 dimensions: functional health literacy, communicative health literacy, and critical health literacy. This part has 14 items on a 5-point Likert scale with a total score of 14 to 70, with higher scores representing better health literacy, whereas functional health literacy is reverse scored. The internal consistency of Cronbach's alpha coefficient in this section was 0.906, the validated factor analysis scale and the intrinsic structural fit was good, the χ^2/df was 1.977<3. The goodness of fit index, modified goodness of fit index, normative fit index, Tucker-Lewis index, value-added fit index, and comparative fit index all met the criteria of 0.9 or above, and the root mean squared error of approximation was 0.040<0.08.

2.3.3 Rumor Recognition Ability

This section refers to the Tencent news truthfulness platform (<https://vp.fact.qq.com/home>), the China internet joint anti-rumor platform (<https://www.piyao.org.cn/>), and the "WeChat anti-rumor assistant" app (<https://developers.weixin.qq.com/community/develop/doc/000ecea2f382087239c87d8505140c>). Based on an extensive literature review, the initial rumor database was initially determined by

three members of the group, and four experts from clinical medicine (gastroenterology), evidence-based medicine, communication science, and public health were consulted. 2 iterations determined that the final survey would include the categories of causes (5 questions), treatment (5 questions), and cancer of atrophic gastritis (6 questions), with entries 2, 3, 4, 5, 6, 7, 9, 14, and 15 being true information and entries 1, 8, 10, 11, 12, 13, and 16 being health rumors, with correct answers scoring 1 point and incorrect or ambiguous answers recorded as 0 points. The total score is 0 to 16, with a Cronbach's alpha coefficient of 0.661. This meant that the higher the score, the higher the rumor recognition ability.

2.4 Statistical Analysis

The data was normally distributed by the one-sample non-parametric Kolmogorov-Smirnov normality test, so the measurement data was expressed as mean±standard deviation (SD), independent samples t-test were used to compare two groups, and an analysis of variance was used to compare multiple groups; the count data was expressed as a composition ratio. The relationship between rumor recognition ability and health literacy of CAG patients was analyzed by Pearson correlation analysis. Two variables can be considered strongly correlated if $|r| \geq 0.7$, moderately correlated if $0.4 \leq |r| < 0.7$, weakly correlated if $0.2 \leq |r| < 0.4$, and very weakly correlated if $|r| < 0.2$. Rumor recognition ability was used as the dependent variable, health literacy in each dimension was used as the independent variable, and demographic and sociological variables with statistically significant differences in the analysis of variance were included as control variables, with $F_{\text{introduced}}=0.05$ and $F_{\text{excluded}}=0.1$, and multiple stepwise linear regression analysis was performed with a test level of $\alpha=0.05$. All of the above data was statistically analyzed by SPSS 26.0.

3 RESULTS

3.1 Social and Demographic Characteristics of the Survey Respondents

Of the 602 participants, 64.5% were male, 78.2% were urban residents, and 84.2% had spouses. Age, education, ethnicity, per capita monthly household income, smoking status, and drinking status were dominated by 41-50 years old (36.9%). Other demographics included bachelor's degree (24.5%), Han nationality (86.9%), RMB 4000-6000/month (21.9%), never smoked (46.2%), and drinking <3 times/week (36.4%), and the proportions were basically the same for each occupation ([Table 1](#)).

3.2 Current Status of Health Literacy and Rumor Recognition Ability among CAG Patients

Based on the participants' health literacy scores, "lowest score" to "mean-SD" (0-40.04) was assessed as low health literacy, "mean-SD" to "mean±SD" (40.04-62.10) as medium health literacy, "mean±SD" to "highest score" (62.10-70) as high health literacy. The CAG patients were divided into three groups high (11.5%), medium (72.9%), and low (15.6%)

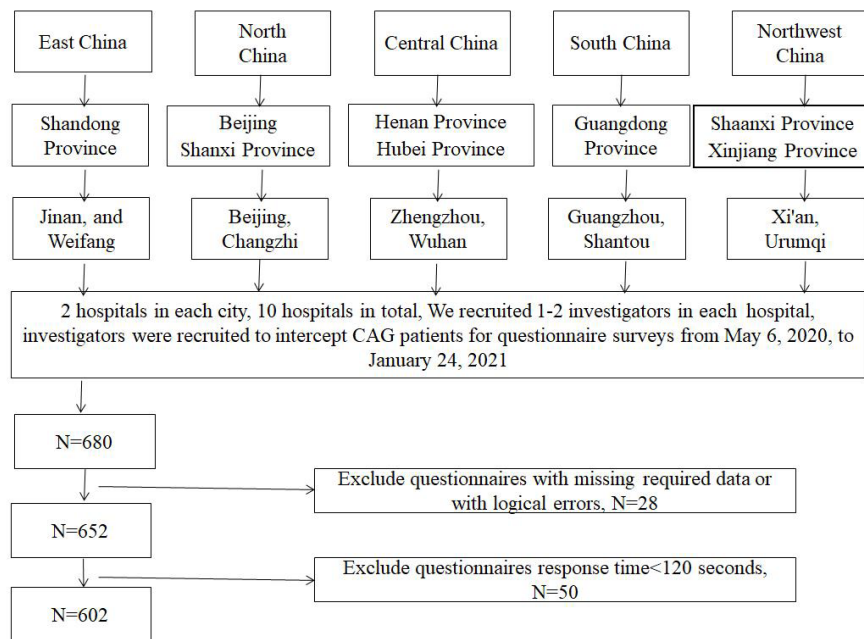


Figure 1. Procedure.

health literacy, with health literacy scores of (66.08 ± 2.19) , (51.23 ± 5.96) , and (29.65 ± 7.86) for the three groups respectively.

The mean health literacy score of the participants was 51.07 (total 70) and the mean functional, communicative, and critical health literacy scores were 16.97 (total 25), 19.08 (total 25), and 15.02 (total 20) respectively, as shown in Figure 2.

The CAG patients scored 8.44 ± 2.95 (total 16) in terms of rumor recognition ability and classified rumors into three categories according to their contents, namely causative, therapeutic, and cancerous, with an average score per question (score/number of questions) of 0.73 ± 0.30 , 0.38 ± 0.20 , 0.48 ± 0.22 , as shown in Figure 3. The t-tests for each dimension of health literacy and rumor recognition were statistically different between the two comparisons ($P < 0.001$, $P = 0.012$), with a test level of $\alpha = 0.05$.

3.3 Comparison of Rumor-recognition Ability among Patients with Different Characteristics of CAG

A univariate analysis was conducted using rumor recognition ability as the dependent variable and general demographic information as the independent variable. The results showed that there were statistical differences in the rumor recognition ability of CAG patients by residence ($P < 0.01$), age ($P < 0.001$), nation ($P < 0.001$), marital status ($P < 0.05$), and level of health literacy ($P < 0.001$), as proven in Table 2.

3.4 Correlation between Health Literacy and Rumor Recognition Skills of CAG Patients

Pearson correlation analysis indicated that the ability to identify rumors showed a weak positive correlation with health literacy and scores on each dimension in CAG

patients ($P < 0.001$), where the ability to identify rumors had the weakest correlation with functional health literacy ($r = 0.145$) and the strongest with health literacy ($r = 0.236$). Details are shown in Table 3.

3.5 Analysis of Factors Influencing the Ability of CAG Patients to Identify Rumors

To analyze the factors influencing the ability to identify rumors, demographic and sociological variables (nation, marital status, residence, age) with statistical differences in the analysis of variance were included as control variables, and each dimension of health literacy was used as an independent variable. Unordered categorical variables (ethnic group, marital status, residence, age) were set as dummy variables, i.e., Han nationality, no spouse, rural area, 40 years and below. The results were obtained through multiple stepwise linear regression analysis by setting the reference group, assigning values to the other groups, introducing $F = 0.05$ and excluding $F = 0.1$ variables, and listing the results in Table 4 below.

4 DISCUSSION

This study's results showed that CAG patients had an overall low score for rumor recognition, with a mean correct rate of 52.8%. The results of the study also showed that: (a) patients with CAG had a higher ability to recognize rumors of causative factors and a lower ability to recognize rumors of both cancer and treatment, probably because the treatment and cancer progression of atrophic gastritis involves more specialized clinical medical knowledge, whereas the causative factors of chronic diseases of the digestive system are closely related to healthy living and eating habits, and it is easier for patients to recognize such rumors. This has revealed the need for health authorities to combine medical knowledge to provide patients with

Table 1. Participant Demographic and Sociological Characteristics

Variables	Variable Categories	<i>n</i>	%
Gender	Male	388	64.5
	Female	214	35.5
Residence	Cities and towns	471	78.2
	Rural	131	21.8
Age	≤40	157	26.1
	41-50	222	36.9
	51-60	122	20.3
	61-70	71	11.8
	≥71	30	5.0
Occupation	Civil servants and career staff	96	15.9
	Agriculture, forestry, animal husbandry, fishery and water conservancy workers	99	16.4
	Other employees and nonemployees	93	15.4
	Business and service personnel	82	13.6
	Operators of production and transport equipment and related personnel	106	17.6
	medical personnel	50	8.3
	Professional and technical personnel (excluding medical personnel)	76	12.6
Educational background	Primary school and below	35	5.8
	Junior high school	94	15.6
	High school	186	30.9
	Undergraduate	258	42.9
	Doctor's/ Master's	29	4.8
Nation	Han nationality	523	86.9
	Other nationalities	79	13.1
Marital status	Single/Divorced/Widowed spouse	95	15.8
	Married	507	84.2
Monthly per capita household income	<4000 yuan	102	16.9
	4000-6000 yuan	132	21.9
	6000-8000 yuan	91	15.1
	8000-10000 yuan	110	18.3
	10000-12000 yuan	77	12.8
	≥12000 yuan	90	15
Smoke	Never smoke	278	46.2
	Quit smoking	209	34.7
	Smoking <60 cigarettes/week	80	13.3
	Smoking ≥60 cigarettes/week	35	5.8
Drink	Never drink	178	29.6
	Quit drinking	171	28.4
	Drink<3 times/week	219	36.4
	Drink≥3 times/week	34	5.6

more expert coaching on the treatment and progression of the disease to enhance their awareness of atrophic gastritis^[17]; (b) Patients in urban areas have a higher ability to recognize rumors, which may be due to the higher level

of overall economic and social development in urban areas, corresponding to better medical services and more reliable sources of information; (c) Patients over 50 years of age have a higher ability to recognize rumors than

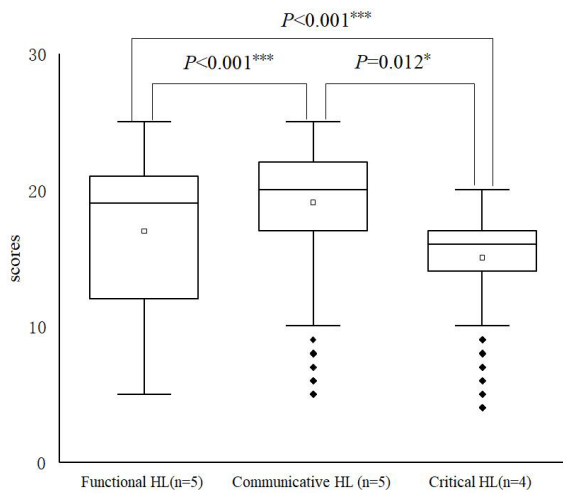


Figure 2. Functional, Communicative, and Critical Health Literacy Scores of the Participants.

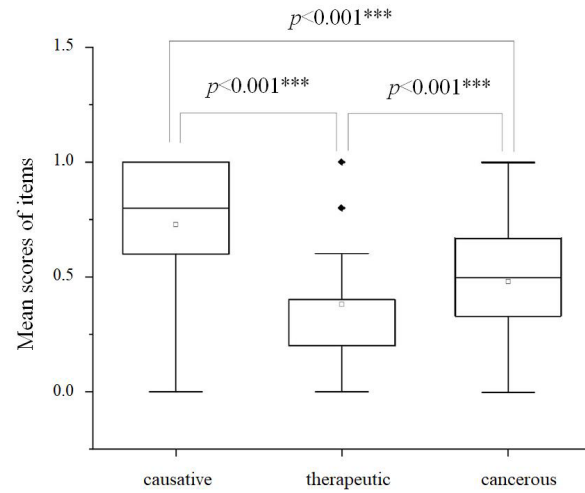


Figure 3. Causative, Therapeutic, and Cancerous Scores of CAG Patients.

Table 2. Comparison of the Ability of CAG Patients to Identify Rumors (mean±SD)

	Ability to recognize rumors	t/F	P
Gender		-0.273	0.785
Male	8.46±2.79		
Female	8.39±3.22		
Residence		-2.963	0.003**
Cities and towns	8.63±2.82		
Rural	7.75±3.28		
Age		7.343	<0.001***
≤40	7.83±3.07		
41-50	8.16±2.72		
51-60	9.40±2.96		
61-70	8.44±2.98		
≥71	9.80±2.51		
Occupation		1.739	0.110
Civil servants and career staff	8.99±2.89		
Agriculture, forestry, animal husbandry, fishery and water conservancy workers	7.92±2.97		
Other employees and nonemployees	8.25±3.31		
Business and service personnel	8.22±3.00		
Operators of production and transport equipment and related personnel	8.32±2.72		
medical personnel	8.50±2.48		
Professional and technical personnel (excluding medical personnel)	9.01±2.96		
Educational background		1.115	0.348
Primary school and below	8.77±2.85		
Junior high school	7.91±2.89		
High school	8.44±2.94		
Undergraduate	8.53±2.99		
Doctor's/ Master's	8.93±2.81		
Nation		5.149	<0.001***

Han nationality	8.68±2.86		
Other nationalities	6.82±3.01		
Marital status		-2.223	0.028 ^c
Single/Divorced/Widowed spouse	7.81±3.02		
Married	8.56±2.92		
Monthly per capita household income		0.992	0.422
<4000 yuan	7.96±3.29		
4000-6000 yuan	8.46±3.11		
6000-8000 yuan	8.76±2.67		
8000-10000 yuan	8.70±2.75		
10000-12000 yuan	8.25±2.86		
≥12000yuan	8.47±2.85		
Smoke		-0.815	0.416
No	8.39±2.97		
Yes	8.63±2.84		
Drink		-0.423	0.673
No	8.40±2.98		
Yes	8.50±2.91		
Health Literacy		21.070	<0.001 ^{***}
High health literacy	10.06±2.61		
Medium health literacy	8.19±2.81		
Low health literacy	7.83±3.46		

Notes: * $P<0.05$, ** $P<0.01$, *** $P<0.001$

Table 3. Correlation between Rumor Recognition Ability and Health Literacy

	RR		FHL		CHL1		CHL2		HL	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
RR	1									
FHL	0.145	<0.01	1							
CHL1	0.224	<0.01	0.403	<0.01	1					
CHL2	0.223	<0.01	0.330	<0.01	0.772	<0.01	1			
HL	0.236	<0.01	0.780	<0.01	0.857	<0.01	0.798	<0.01	1	

Notes: RR: rumor recognition ability; FHL: Functional health literacy; CHL1: Communicative health literacy; CHL2: Critical health literacy; HL: Health literacy.

patients under 40 years of age, while the study of Agree et al.^[18] shows that older individuals are at a disadvantage in accessing online health information, and the study of Liao and Fu^[19] suggests that older individuals are less sensitive to information credibility cues than younger individuals. This may be because older people may rely more on offline information sources, and the older they are, the longer they have coexisted with diseases, and thus the richer health experience they have. Moreover, it is necessary to strengthen the provision of health information in hospitals, communities^[20], and families; (d) Patients with spouses have a higher ability to recognize rumors. This may be due to the fact that patients with spouses receive more social support^[21], in the sense that spouses and other relatives provide information to patients, and this therefore leads to patients paying more attention to their health because they have more social responsibilities.

The overall health literacy score of CAG patients was 51.07±11.03, with an actual score/total score of 0.730, lower than the health literacy of diabetic patients studied by scholar Lee et al.^[22]. The analysis may be related to the different components of the study population, the larger proportion of CAG patients with lower years of illness in this study, and the relatively low average age. The results showed that the highest communication health literacy scores were consistent with the study of Li et al.^[23], possibly because the selected sample was located in hospitals with better doctor-patient communication, while the lowest functional health literacy scores differed from previous findings^[24,25]. We believe this is because atrophic gastritis is still relatively unknown to the public compared to common chronic diseases such as diabetes, the related terms are more difficult to understand, and knowledge is not widely available, so we still have a long way to go

Table 4. Analysis of Factors Influencing the Ability of CAG Patients to Identify Rumors

Independent Variable	Non-standardized Coefficient			Standardized	<i>t</i>	<i>P</i>
	β	SE	95%CI	β		
(Constant)	3.772	0.637	[2.522,5.022]		5.926	<0.001
Han nationality						
Other nationalities	-1.768	0.339	[-2.434,-1.101]	-0.203	-5.21	<0.001
Single/Divorced/Widowed spouse						
Married	0.196	0.324	[-0.440,0.833]	0.024	0.605	0.545
Cities and towns						
Rural	0.335	0.275	[-0.205,0.876]	0.047	1.218	0.224
≤40						
41-50	0.304	0.299	[-0.283,0.891]	0.05	1.016	0.310
51-60	1.696	0.345	[1.019,2.373]	0.232	4.923	<0.001
61-70	1.507	0.408	[0.704,2.309]	0.165	3.688	<0.001
≥71	2.834	0.558	[1.739,3.930]	0.209	5.081	<0.001
Critical health literacy	0.166	0.034	[0.098,0.234]	0.195	4.816	<0.001
Functional health literacy	0.071	0.022	[0.028,0.114]	0.136	3.232	<0.001

Notes: In the multi-factor analysis of unordered multicategorical variables, Han nationality, no spouse, rural area, and 40 years old and below were set as the reference groups respectively, so the β and *P* values for the above four groups are not available in the output.

for the popularization of science and health promotion of CAG. In addition, research suggested that critical thinking is an essential skill for determining whether the information is true or false^[26], and that CAG patients' ability of critical thinking, judgment, analysis, and application of information also need to be strengthened. Therefore, health professionals should assist CAG patients with critical analysis of health information and provide personalized guidance to help patients raise their health literacy level.

The results of Pearson correlation analysis in this study showed that the health literacy of CAG patients was weak and positively correlated with the ability to identify rumors ($r=0.236$, $P<0.01$) and multiple linear regression analysis showed that functional health literacy ($\beta=0.136$, $P<0.001$) and critical health literacy ($\beta=0.195$, $P<0.001$) were influential factors in the ability to identify rumors after adjusting for the nation, marital status, residence, and age variables. This is supported by a recent study on health literacy and fear of COVID-19 in medical students, showing that higher levels of health literacy may protect from fear during the pandemic^[27], and a study on influenza vaccine rumors in Korea, which revealed that increased health literacy may prevent people from automatically accepting health rumors as true^[6]. Functional health literacy reflects the extent to which patients have difficulty reading hospital and pharmacy instructions or leaflets, and since literacy is difficult to change in a short period of time, critical health literacy is even more important in improving the rumor-reading ability of CAG patients. According to Nutbeam's conceptual model of health literacy, where critical health literacy refers to the ability of

people to critically analyze health information and to use it selectively^[28]. With the advancement of internet technology, the health information that patients can receive is becoming more and more complex, and it is increasingly difficult to distinguish between the scientific and non-scientific aspects of many "health sciences". Not only can health rumors lead to unnecessary fear, but they can also cause individuals to mishandle their illnesses, which can delay their treatment processes or cause other negative health consequences^[29]. Several studies have shown that people with higher critical health literacy are more likely to evaluate and distinguish between low-quality and high-quality health information, and are better able to use the right health information to make the right health decisions^[30,31]. Therefore, health institutions and practitioners should consider the effectiveness of critical health literacy when conducting anti-health rumor campaigns. It is important to invest in improving patients' health literacy as this will help reduce the spread of rumors and reduce health expenditures in order to control the negative impacts of health rumors^[32].

It is recommended that (a) Health professionals should use mobile health care techniques (text message and WeChat) to increase the use of pictures and videos^[33] or try to adopt feedback teaching, allowing patients to repeat in their own words, as a way to check the patient's level of understanding, to ensure that the patient has received accurate health information, to raise the patient's health literacy, and thus to enhance the ability to identify health rumors^[34]. (b) When receiving health science information, patients should maintain a critical and skeptical attitude, noting that the conclusions drawn from health science

should have sufficient evidence and be supported by appropriate logic, and that the scientific validity of the health science works they are exposed to can be judged by utilizing a consensus of scientific evaluation of health science works^[35]. (c) The government should invite professionals to make scientific proof before each health information is released and establish a professional and authoritative health communication and anti-rumor platform to help solve the health rumor problem^[36].

The strength of this study is that it evaluates for the first time the health literacy and rumor recognition abilities of CAG patients, and explores the correlation between health literacy and rumor recognition abilities of CAG patients. In addition to emphasizing the importance of critical health literacy, the author provides a theoretical and practical basis for improving CAG patients' ability to recognize rumors.

Furthermore, some limitations exist in this study. Firstly, as a cross-sectional study, we could only confirm the correlation between health literacy and rumor recognition ability in CAG patients but could not determine the causal relationship between the two. Secondly, the convenience sampling method was employed to conduct the survey, which may affect the studies representativeness. In addition, the self-rating used for the health literacy test may be influenced by subjective factors.

5 CONCLUSION

In conclusion, CAG patients had lower levels of rumor recognition ability, and critical health literacy had a strong positive impact on their rumor recognition ability when controlling for the nation, marital status, residence, and age variables. Therefore, health care professionals should pay attention to the cultivation of critical health literacy in CAG patients, in order to enhance the rumor-recognition ability of CAG patients and reduce the harmful effects of rumors on CAG patients.

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Ethical Statement

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee (JKWH-2020-10).

Conflicts of Interest

The authors declared no conflict of interest.

Data Availability

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

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Author Contribution

Wu Y contributed to conceptualization, software, investigation, writing-review and editing, supervision, and project administration; Feng B contributed to validation and visualization; Li Y contributed to formal analysis, investigation, data curation, and writing original draft preparation; Wang Y contributed to investigation, data curation, and writing original draft preparation; Suo B contributed to investigation and supervision; Liu J contributed to investigation, data curation, and writing original draft preparation.

Abbreviation List

CAG, Chronic atrophic gastritis
SD, Standard deviation

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