The International Conference on Interdisciplinary Humanities and Communication Studies
DOI: 10.54254/2753-7048/5/20220445

Analysis of Influencing Factors of Eye Examination Intention of College Students based on Health Belief Model

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Abstract: The objective is to better understand the willingness for ophthalmic examination of college students and its influencing factors and to provide theoretical support for relevant health departments to develop targeted propaganda strategies for ophthalmic examination. The methods snowball sampling and volunteer recruitment were used to collect samples from the Internet community. College students' intention to get an ophthalmic examination was investigated using the health belief model (HBM) and a standardized scale. Pearson correlation analysis was used to study the relationship between relevant independent variables and college students' intention for ophthalmic examination. The intention of college students to have an eye examination was positively correlated with the degree of media trust, frequency of media interaction, perceived vulnerability, perceived severity, perceived benefits, behavioral signals, and self-efficacy. In conclusion, the perceived disorder was negatively correlated with the purpose of the ophthalmic biological study of college students. In conclusion, the future can strengthen eye health education for college students based on the HBM model, emphasizes eye disease susceptibility and severity, improve students' self-efficacy, at the same time increase the media eye health knowledge and frequency of ophthalmic medical knowledge propaganda, take active measures to improve college students from the media's trust.

Keywords: ophthalmic examination, willingness to undergo a medical exam, influencing factor, health belief model, we media

1. Introduction

1.1. Research Background

In clinical medicine, eye diseases are a kind of non-negligible disease known for their high prevalence and usually irreversible characteristics. Common eye diseases are refractive error, eyelid, intraocular, and lens disease. With the rapid extension of the "information superhighway", more and more people are gradually increasing the frequency and time of electronic equipment in work, study, and life, and unhealthy habits are becoming more and more prominent, affecting their physical and mental health. College students with smartphones, computers, and other electronic equipment of the high-intensity

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exposure population are greatly influenced by it. This situation is increasingly drawn the attention of social people from all walks of life. The related research at home and abroad points out that exposure to the computer screen for a long time will cause significant adverse effects on college students' vision and even the whole body. Among them, the incidence of vision loss, blurred vision, and dry eye is prominent.

For example, this eye disease has become a significant problem in China's public health care field. In recent years, relevant investigations have shown that the prevalence of myopia among young people aged 18-25 years (including college students) is close to 80%, and there is still an increasing trend. Moreover, patients with high myopia (> 600 degrees) show the characteristics of high incidence and profound degree, and they account for more than 15% of the total number [1]. Related studies have shown that myopia may even lead to blindness. Dry eye, another eye disease, not only often brings foreign body sensation and acid swelling sensation to patients but also leads to visual impairment and even blindness in severe cases.

1.2. Research Significance

College students, as a group with higher education backgrounds, are also an important reserve force for national development. Early detection and intervention of eye diseases, including vision loss, are conducive to the protection of the eye health of college students, the improvement of the overall quality of college students, and the development of the country. In mainland China, college students only have an annual eye examination after entering college, which fails to know the specific health conditions of their eyes and ignores other potential eye diseases besides myopia.

A perfect ophthalmic examination should include twelve items, such as a visual acuity test, intraocular pressure test, fundus evaluation, and intraocular pressure test. The regular ophthalmic examination can detect ocular diseases early and take intervention measures. However, the willingness of college students to get an ophthalmic examination is influenced by many factors. Most college students will consult an ophthalmologist or get an ophthalmic examination only when they encounter problems related to their eyes or vision. By understanding the factors affecting people's willingness to undergo an ophthalmic examination, relevant departments can better formulate targeted propaganda strategies for ophthalmic examination and encourage college students to have a regular ophthalmic examination, which is conducive to the timely prevention and treatment of ocular diseases. At the same time, according to previous studies, media plays an important role in individuals' health behaviors. In order to provide theoretical support for the preceding subjects to develop communication strategies, this study analyzes the factors affecting college students' willingness to undergo an ophthalmic examination and attempts to explore the role of "we media" in this regard. This study is based on the health belief model.

1.3. Health Belief Model

Glanz, Karen, and Bishop, Donald B once mentioned that, as one of the earliest theories to study health behavior, the health belief model was proposed by social psychologist Irwin M. Rosenstock in the 1950s. Many researchers employ health belief model to explain and predict people's behaviors related to health. [2].

The HBM model is composed of factors such as people's beliefs about health problems, perceived benefits and barriers to action, and self-efficacy, which together influence individual health behaviors, especially those related to medical health. An individual's subjective perception of his or her own likelihood of acquiring health problems is referred to as perceived susceptibility. Perceived severity is a person's subjective assessment of the seriousness of a health problem and its potential implications. The subjective sense of an individual that engaging in a health-related behavior can

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lessen the risk of disease is referred to as perceived benefit. The subjective feeling of an individual regarding the difficulty of doing a health-related behavior is referred to as the perceived hurdle. Cues to action are internal or external elements that influence a person's health behavior. The perception of an individual's ability to successfully do a specific task is referred to as self-efficacy [3].

Since its birth, the health belief model has been supported by a large number of empirical studies in the process of continuous development, such as the meta-analysis of the health belief model by Carpenter and Christopher J [4]. Health belief models have been used to study various health behaviors, including colorectal cancer screening, female breast cancer screening, HIV prevention and treatment, and patient compliance. In recent years, the model has been used by researchers to analyze factors that influence willingness to get vaccinated.

1.4. Research in Foreign Countries

Many foreign scholars have analyzed people's physical examination intention and its influencing factors based on the health belief model. J P Fulton and J S Buechner used telephone interviews to study the influencing factors of breast cancer screening in Rhode Island women aged 40 years and older. The study found that helping women overcome related barriers and enhancing their perception of the benefits of physical examination can help women be screened for breast cancer [5]. Wong R K, Wong M L and others also started from the health belief model and used the survey method of face-to-face structured interviews to study the factors that affect colorectal cancer screening and to explore the differences in influencing factors between men and women. The study found that ethnicity, psychological concerns about contracting cancer, psychological barriers to physical examination, doctor's tips, and public speaking about CRC were correlated with screening with gender differences [6].

Some scholars have also studied people's physical examination behavior based on other theories. Lydia Cheng and Hye Kyung Kim conducted a study on the intention of ophthalmological examination in the Singaporean population aged 40-60 based on the theory of planned behavior. The findings demonstrated that the TPB's elements were important predictors of willingness to have an ocular physical examination. [7].

Some scholars have combined the health belief model and other theories to study people's willingness for physical examination. Xinbo Wang and Dandan Chen combined the health belief model and planned behavior theory to study women's breast cancer screening willingness and found that perceived benefit, perceived impairment, and self-efficacy in the health belief model were strongly correlated with physical examination behavior. Subjective norms, behavioral attitudes, and perceived behavioral control all have important effects on physical examination intention [8].

In general, international scholars' research on people's physical examination intentions is often based on a certain theoretical basis, and the respondents are surveyed using standardized scales. Among the research topics, there are many studies on people's intention to screen for serious diseases such as breast cancer and colorectal cancer, and there are relatively few studies on ophthalmic examination.

1.5. Research in Mainland China

Some scholars in China have also researched the influencing factors of specific groups' health behavior based on the health belief model. Among them, Zhang Zhuo, Shi Guoshuai, and others used the health belief model to perform a study on the periodic health examination behavior of rural inhabitants in Shandong province. They used cross-sectional survey methods and multiple regression analysis and found that: low annual income, low level of health knowledge, and self-esteem rural residents with low efficacy, more perceived barriers, less perceived benefits, and weaker perceived susceptibility have poorer behavioral intentions for periodic health checks [9].

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Rao Jingfen and Zhu Tong used multivariate Logistic regression analysis to explore the willingness and influencing factors of two cancer screenings among women with general physical examination in the Chengde area. The study found that women who live in the city, are 31-60 years old, and have a master's degree or above are more willing to be screened for two cancers than ordinary women in Chengde City [10]. Zhang Xianglong used univariate chi-square test, and multivariate Logistic regression test to understand the current status and influencing factors of health examinations for elderly groups with different demographic characteristics and health behaviors. The study found that gender, education level, occupational status, and Eight factors, including chronic disease status, distance from the nearest medical institution and medical insurance coverage, frequency of exercise, and whether or not watching TV, were related to their willingness to undergo physical examination [11].

Peng Xingzhi and Ma Yan, based on the theory of knowledge, belief, and action, conducted a household survey on the awareness of physical examination and physical examination actions of rural residents in mountainous areas. The study found that economic factor was the main reason why residents did not take physical examinations. Incomplete knowledge, lack of physical examination sites in non-profit hospitals, and concerns about diseases are also reasons that hinder residents' physical examinations [12].

In general, most domestic studies on physical examination willingness are not based on known theoretical foundations, and self-made questionnaires are often used to survey respondents. In addition, there are few surveys and studies on people's willingness for physical examination based on the health belief model in China, and no research has been found on the willingness of college students for ophthalmic examination and its influencing factors, and related fields need to be further explored.

2. Research Methods

2.1. Research Hypothesis

This research investigated college students' willingness to submit to an ocular physical examination and its affecting factors based on the five components of the health belief model. Perceived susceptibility in this study relates to college students' subjective perceptions of their vulnerability to developing eye diseases. College students' subjective perceptions of the harmfulness of eye diseases are referred to as perceived severity. The term "perceived benefits" refer to how an ocular physical examination is perceived to be beneficial by college students. College students' subjective perceptions of some elements that impede their own eye physical examination are referred to as perceptual barriers. College students' self-efficacy is their belief in their capacity to conduct ocular physical examinations.

In the health belief model, behavioral cues are also important factors in promoting healthy behaviors, and behavioral cues contain external cues and internal cues, in which external cues involve media [3,4,13]. This study hypothesizes that external behavioral cues from We-media influence college students' behavioral willingness to participate in ophthalmic examination, and that the stronger the behavioral cues, the stronger the behavioral willingness of college students to participate in ophthalmic examination.

In the past, various empirical studies have suggested that people's trust in media has an impact on their health-related behaviors, and people often feel motivated to do health-related behaviors encouraged by the media they trust [14-16]. Media trust is defined as people's cognition of media's ability to do their own work well and care about the public and social interests, including trust in media institutions, trust in communicators and trust in media content [17]. In this study, it is hypothesized that college students' trust in we media is positively correlated with college students' willingness for physical examination. College students' trust in "we media" can include trust in "we media platform", "we media blogger" and "we media" content.

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Studies by other scholars also suggest that exposure to media can affect their health behaviors. By Slater's definition, exposure to media is defined as the amount to which audiences have been exposed to specific media information or information types Messages or message types [18]. Based on this, this study hypothesizes that the frequency of college students' exposure to information related to eye diseases and ophthalmic examination through we-media is positively correlated with the willingness of college students to undergo an ophthalmic examination.

Based on the above, the hypotheses of this study are as follows. H1: There is a positive correlation between perceived susceptibility and college students' intention of the ophthalmic examination. H2: Perceived severity is positively correlated with college students' intention for the ophthalmic examination. H3: Perceived benefits are positively correlated with college students' intention of ophthalmic examination. H4: Perception impairment is negatively correlated with college students' intention of ophthalmic examination. H5: Self-efficacy is positively correlated with college students' intention of ophthalmic examination. H6: Behavioral cues were positively correlated with their willingness to undergo a physical examination. In addition, we also set up two hypotheses involving we media. H7: College students' trust in we media is positively correlated with college students' willingness to physical examination. H8: The frequency of college students' exposure to information related to eye diseases and ophthalmic examination through we media is positively correlated with the willingness of college students to undergo an ophthalmic examination.

2.2. Research Objects and Investigation Methods

In this study, college students in mainland China were selected as subjects, and the cognitive status and willingness to ophthalmic diseases and ophthalmic examination of college students were investigated by online questionnaire. The sampling method was a combination of snowball sampling and volunteer recruitment. In this study, college students are defined as full-time undergraduates, Master's Degree student, and doctoral students in mainland China.

2.3. Questionnaire Design

The questionnaire used in this survey consists of three parts. The first part includes some basic demographic information, such as braincase sex, age, and educational background. The second part is the attitudes and behaviors of the respondents, including the frequency of contact with information related to eye diseases and ophthalmic examination through we media, the degree of trust in media, and the willingness to conduct an ophthalmic examination. Regarding the variable of college students' trust in We-media, the questionnaire gave, "Do you believe that we media bloggers can accurately provide health-related information?" "Do you trust health-related information from certain types of media?" "Do you trust the information you get from we media?" On three questions, they rated their attitudes on a five-point scale from "very doubtful" to "very trusting." For "by the media contact eye diseases and the frequency of the ophthalmic medical information related to" the variable, respondents were asked to answer whether they use short videos from the media platform since long video media platform and graphic class since the media platform to get hold of eye diseases and eye examination information, they will be from "never" to "always" five degrees of choice in their situation.

The third section is related to questions surrounding the health belief model (perceived susceptibility, perceived severity, perceived handicap, perceived benefit, self-efficacy, behavioral cues), which is set up according to the standardized scale. In questions developed around each variable of the health belief model, respondents were asked to indicate their level of agreement with the statements on a five-point Likert scale (strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5).

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3. Research Results and Analysis

3.1. Descriptive Data Analysis

In total, 368 questionnaires were gathered for this study, 271 of which were legitimate, or roughly 73.6%. The results in Table 1 show that there are 142 males, accounting for 52.9%, and 129 females, accounting for 47.6%. There are 8 people aged between 16 and 18, accounting for 3.0%, 191 people aged between 19 and 22, accounting for 70.5%, and 72 people aged over 22, accounting for 26.6%. There are 223 undergraduate students, accounting for 82.3%, 43 master's students, accounting for 15.9%, and 5 doctoral students, accounting for 1.8%. In this survey, 48 people never take part in the ophthalmic examination, accounting for 17.7%, 97 people seldom take part in the ophthalmic examination, 44 people occasionally take part in the ophthalmic examination, accounting for 16.2%, 63 people often take part in the ophthalmic examination, accounting for 23.2%, only 19 people always take part in the ophthalmic examination, accounting for 7%.

Table 1: Population characteristics.

Characteristics	Options	N	Percent(%)
Gender	Male	142	52.4
	Female	129	47.6
Age	16-18	8	3
	18-22	191	70.5
	>22	72	26.5
Education	Undergraduates	223	82.3
	Master's Degree student	43	15.9
	Doctoral students	5	1.8
Eye examinations	Never	48	17.7
	Seldom	97	35.8
	Occasionally	44	16.2
	Often	63	23.2
	Always	19	7

3.2. Correlation Analysis

Firstly, the reliability analysis of the three questions of behavioral intention is carried out in this study. The results in Table 2 show that the Alpha value is 0.712. Reliability analysis was conducted on four questions about the frequency of exposure to eye diseases and ophthalmic examination information through we-media, and the Alpha value was 0.771. The reliability analysis of the five questions of media trust shows that the Alpha value is 0.879. The reliability analysis of five questions of perceived susceptibility was conducted, and the Alpha value was 0.877. The reliability analysis of the four problems of perceived severity was conducted, and the Alpha value was 0.785. For the reliability

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analysis of the four questions of perceived benefits, the Alpha value was 0.831. The reliability analysis of the five problems of perceptual barriers showed that the Alpha value was 0.821. The reliability of the three questions of self-efficacy was analyzed, and the Alpha value was 0.732. The two questions about cues to action were subjected to a bivariate Pearson correlation analysis, and the results revealed a strong correlation ($R=0.614$, $p<0.001$). As a result, these two factors can be combined.

Table 2: Reliability statistics.

Variable	Cronbach's Alpha	N of Items
Intention	0.712	3
Frequency	0.771	4
Trust in media	0.879	5
Perceived susceptibility	0.877	5
Perceived severity	0.785	4
Perceived benefits	0.831	4
Perceived barriers	0.821	5
Self-efficacy	0.732	3

Secondly, the Pearson correlation analysis was conducted to analyze the perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, cues to action and the frequency of exposure to information related to eye diseases and ophthalmic examination through we-media and the intention of college students to undergo ophthalmic examination respectively.

In this study, the relationship between behavioral intention and perceived susceptibility was analyzed using Pearson correlation. Results from Table 3 revealed a good correlation ($R=0.487$, $p<0.001$) between behavioral intention and perceived susceptibility ($M=2.590$, $SD=0.979$).

Table 3: The correlation between behavioral intention and perceived susceptibility.

		Intention	Perceived susceptibility
Intention	Pearson Correlation	1	0.487**
	Sig. (2-tailed)		0
	N	271	271
Perceived susceptibility	Pearson Correlation	0.487**	1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

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The relationship between behavioral intention and perceived severity was then analyzed using Pearson correlation. Findings in Table 4 revealed a significant correlation (R=0.500, p<0.001) between behavioral intention and perceived severity (M=2.510, SD=0.941).

Table 4: The correlation between behavioral intention and perceived severity.

		Intention	Perceived severity
Intention	Pearson Correlation	1	0.500**
	Sig. (2-tailed)		0
	N	271	271
Perceived severity	Pearson Correlation	0.500**	1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

Next, Pearson correlation analysis was conducted between behavioral intention and perceived benefits. Results in Table 5 showed that there was a positive correlation (R=0.417, p<0.001). between behavioral intention and perceived benefits (M=2.329, SD=0.915).

Table 5: The correlation between behavioral intention and perceived benefits.

		Intention	Perceived benefits
Intention	Pearson Correlation	1	0.417**
	Sig. (2-tailed)		0
	N	271	271
Perceived benefits	Pearson Correlation	0.417**	1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

Following that, Pearson correlation analysis was performed to determine the relationship between behavioral intention and perceived barriers. Table 6 revealed a negative connection (R=-0.123, p<0.05) between behavioral intention and perceived barriers (M=3.494, SD=0.875).

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Table 6. The correlation between behavioral intention and perceived barriers.

		Intention	Perceived barriers
Intention	Pearson Correlation	1	—0.123*
	Sig. (2-tailed)		0.043
	N	271	271
Perceived barriers	Pearson Correlation	-0.123*	1
	Sig. (2-tailed)	0.043	
	N	271	271

(**. Correlation was significant at the 0.001 level)

The relationship between behavioral intention and self-efficacy was then analyzed using Pearson correlation. According to Table 7's findings, there is a positive correlation (R=0.464, p<0.001) between behavioral intention and self-efficacy (M=2.469, SD=0.892).

Table 7. The correlation between behavioral intention and self-efficacy.

		Intention	Self-efficacy
Intention	Pearson Correlation	1	0.464**
	Sig. (2-tailed)		0
	N	271	271
Self-efficacy	Pearson Correlation	0.464**	1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

Next, Pearson correlation analysis was conducted between behavioral intention and cues to action. The results in Table 8 showed that there was a positive correlation (R=0.481, p< 0.001) between behavioral intention and behavioral cues (M=2.550, SD=0.941) .

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Table 8. The correlation between behavioral intention and cues to action.

		Intention	Cues to action
Intention	Pearson Correlation	1	0.481**
	Sig. (2-tailed)		0
	N	0.481**	271
Cues to action	Pearson Correlation		1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

The relationship between behavioral intention and trust in media was then examined using Pearson correlation analysis. According to Table 9's findings, behavioral intention was correlated (R=0.516, p<0.001) with trust in media (M=2.700, SD=0.947).

Table 9. The correlation between behavioral intention and trust in media.

		Intention	Trust in media
Intention	Pearson Correlation	1	0.516**
	Sig. (2-tailed)		0
	N	271	271
Trust in media	Pearson Correlation	0.516**	1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

Next, Pearson correlation analysis was conducted between behavioral intention and the frequency of exposure to information related to eye diseases and ophthalmic examination through We-media. Results in Table 10 show that: Behavioral intention (M=2.630, SD=0.963) was positively correlated (R=0.429, p< 0.001) with the frequency of exposure to information related to eye diseases and ophthalmic examination through we-media (M=2.289, SD=0.953).

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Table 10: The correlation between behavioral intention and frequency of exposure to frequency of exposure to information related to eye diseases and eye physical examination through we media.

		Intention	Frequency
Intention	Pearson Correlation	1	0.429**
	Sig. (2-tailed)		0
	N	271	271
Frequency	Pearson Correlation	0.429**	1
	Sig. (2-tailed)	0	
	N	271	271

(**. Correlation was significant at the 0.001 level)

4. Conclusion

4.1. Key Findings

By Pearson correlation analysis, this study found that medium trust and ophthalmic medical college students intend to show a significant positive correlation through the media contact eye disease and the frequency of the ophthalmic medical information with their eye check-up will show a significant positive correlation, perceived susceptibility and their eye check-up will show a significant positive correlation, There was a significant positive correlation between perceived severity and their willingness to undergo an ophthalmic examination, perceived benefits, and behavioral cues, and self-efficacy and willingness to undergo an ophthalmic examination. However, a significant negative correlation exists between perceived impairment and college students' intention of ophthalmic examination. These results confirm the research hypothesis of this study. Therefore, this study believes that media with health science as the main content can enhance college students' trust in themselves by improving their professional level and providing accurate and informative health knowledge to strengthen their willingness to undergo an ophthalmic examination. In this regard, we media can also actively cooperate with eye hospitals or clinics to obtain relevant information from these professional channels. This kind of "we media" can also provide as much information as possible about eye diseases and ophthalmic examination to improve the publication frequency of relevant content. In this regard, relevant we media can actively cooperate with applicable policies of medical and health departments to obtain specific financial or material help from the authorities. In addition, relevant we media can also enhance the publicity of the susceptibility and severity of eye diseases and the attention of college students to eye diseases. And they can also adopt a reasonable way to encourage college students to take an ophthalmic examination to enhance their self-efficacy.

4.2. Future Studies

There are some problems in the research conducted in this research. This research publishes questionnaires on the Internet and obtains samples using snowball and soliciting volunteers. The number of effective samples collected is small, which may lead to the problem of insufficient sample representation in this research. In addition, this study only conducted Pearson correlation analysis on college students' willingness to undergo ophthalmic examination and potential influencing factors, and

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the analysis method was relatively single. In the future, scholars who are interested in this issue can conduct large-scale investigation and research on this research issue and conduct more adequate analysis.

With the increasing frequency of electronic products used by college students, the incidence of eye diseases such as myopia and dry eye has increased significantly among college students, and the eye health problems of college students have become increasingly prominent. Most college students go to medical institutions for ophthalmic examination only when they feel obvious discomfort or vision loss. A regular and perfect ophthalmic physical test can detect eye diseases early and take intervention measures. Through the research, the factors affecting the ophthalmic examination of college students are helpful for relevant institutions to take targeted strategies to encourage college students to participate in the ophthalmic examination. This field has research value. However, until now, there has been little research on the influencing factors of the ophthalmic examination of college students, which needs further study.

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