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A Statistical Study of Health Literacy at a University in Jiangsu, China

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This paper aims to understand students' health literacy condition at a university in Jiangsu Province by determining possible influencing factors, and to give suggestions to improve health literacy education. A total of 165 first, second, and third-year students completed the Mandarin Health Literacy Scale (MHLS) questionnaire. Statistical analyses, including difference analysis, correlation analysis, regression analysis, and interactive analysis, were applied to examine the relationships between variables. The average score on the questionnaires was 45.78 out of a possible 50. The correlation coefficients between the Medical Service System and other sections were lower than those among the other sections. In addition, the high- and low-scoring groups on the Medication Information section had a significant interactive relationship with the Medical Service System in the Health Education Passage. In short, the health literacy of the students at this university was excellent. It can be concluded from the inter-section analysis that not only should their knowledge of the information in the Medical Service System section be strengthened, but Outpatient Department Conversation and Medication Information were key to improving overall health literacy.

Keywords: Health literacy, health education of students, university students, Jiangsu, China

JEL: I19, I29

Health literacy has attracted great public awareness in China as reforms of the medical and health system reach deeper levels. Health literacy is defined as the degree to which an individual has the capacity of obtaining, processing, and understanding basic health information and services to make appropriate health decisions (Berkman, Davis and McCormack, 2010). Health literacy serves as a stronger predictor of health status than traditional sociodemographic factors like age, education, income level, employment status, and race (Speros, 2005; Wilson, 2003). Nutbeam (2000) divided health literacy into three stages: functional health literacy, interactive health literacy, and critical health literacy. This concept was put forward by Chinese authorities in 2005 in the "Basic knowledge and skills of the people's health literacy" manual (Li, 2008). Both the government and the general public have begun to realize the importance of health literacy because of the great costs and time involved in medical treatment (Pawlak, 2005). However, health literacy research in China is still quite limited.

The first issue involves limited measurement tools. At present, there are several health literacy mea-

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surement models and instruments. The Test of Functional Health Literacy in Adults (TOFHLA) and the Rapid Estimate of Adult Literacy in Medicine (REALM) are the most frequently used tools for measuring health literacy (Lee, 2013), but they are only available in English and Spanish languages, while the Mandarin Health Literacy Scale (MHLS), produced in Taiwan, is aimed at promoting health literacy among people who speak Mandarin. No validated tool has been developed in simplified Chinese to assess functional health literacy in Mainland China (Mantwill and Schulz, 2016).

Moreover, compared to the long and comprehensive history of health literacy studies in the United State in a wide variety of settings, only a limited number of health literacy studies have been conducted in China (Wang *et al.*, 2015). Most such studies have been conducted in Taiwan or Hong Kong and only a few have looked at the relationship of literacy and health outcomes in Mainland China (Mantwill and Schulz, 2016). Those studies used health literacy measures that primarily focused on understanding and application of health information without assessing reading or numeracy skills (Wang *et al.*, 2013).

Furthermore, as demonstrated by limited research outcomes, the health literacy rate in China is low. In 2009, the Chinese Ministry of Health conducted a survey to investigate health literacy among general public using the measurement tool "Health literacy for Chinese citizens – Basic knowledge and skills" (Shen *et al.*, 2015), which includes 25 items on basic knowledge and concepts, 34 items on healthy lifestyle, and 7 items in terms of basic skills (Li and Tao, 2008). The results showed a low health literacy rate, such that only 6.48 percent of the 79,542 participants, aged between 15–69 years, had adequate health literacy (Chinese Ministry of Health, 2009). The results guide that it is imperative to develop people's independent ability in medical care through follow-up research.

A study conducted by Wang *et al.* (2015) found low general health literacy rate of the residents in Jiangsu province of China. At least 40 percent of the residents in Jiangsu province had no knowledge about health literacy (Wang *et al.*, 2015). Similarly, the results of a multi-logistic regression study showed that rural residents (males only) those with lower levels of education, and those with poor health had lower health information literacy (Nie *et al.*, 2014). Jiangsu is a province of eastern China much more developed than other provinces in China. If this is in fact the case in Jiangsu province, then the outcomes for Jiangsu would hold great significance for rest of the China.

Globally, education has been regarded as a determinant of health literacy (Ickes and Cottrell, 2010). Though limited health literacy is strongly related to many static socioeconomic indicators, education levels can change these conceptions (Paasche-Orlow and Wolf, 2007; Pawlak, 2005). Moreover, college students have perhaps the best access to resources beneficial to improve their health literacy skills (Harper, 2014), including education related to health literacy. However, research has shown that highly educated individuals still have difficulties in understanding and utilizing medical information (Schwartz *et al.*, 1997). Studies show that, presently, college students are graduating without the skills needed

to understand and apply medical information, such as comprehension, numeracy, media literacy, and computer literacy (American Institutes of Research, 2006; Hargittai and Hinnant, 2008). Also, it has been observed that young adults may feel that they lack health-related information and the ability to understand and use this information (Manganello, 2008; Perry, 2014). According to another study conducted in a military college in Chongqing, China, the health literacy of the school was only 21.05 percent, indicating that there is still great room for improvement. It was also found that departments of the school may also benefit from incorporating health literacy into their curricula (Rong *et al.*, 2017). Therefore, more attention should be devoted to the health literacy of the students of normal universities in China. This paper provides suggestions on such health literacy.

Previous literature indicates that most health literacy research has been carried out taking into account a variety of background variables, demographic characteristics, and risk factors to determine the relationships between these factors and health literacy outcomes. Applying TOFHLA on a sample of college students, Ickes and Cottrell (2010) explored the effects of factors like gender, race, islander origin, and student status on health literacy outcomes. On the other hand, Wu *et al.* (2017) uncovered other relevant factors like the prevalence of low health literacy was negatively associated with the level of education, occupation, and annual household income, but was not associated to gender, age, or the presence of non-communicable chronic disease. In addition, suggestions on the health literacy of high-risk populations in China have been given accordingly (Wang *et al.*, 2015). Moreover, some researchers believe that it is important to obtain insights into the relationship between different domain-specific health literacy skills and individuals' abilities to take an active role in managing their health needs (van der Heide *et al.*, 2015). In addition, one study revealed that subjects of study were related to university health education; in particular, the number of health-related subjects studied were positively related to students' health promotion domain-based competencies (Rong *et al.*, 2017; Sukys *et al.*, 2015).

Unlike previous studies, we focused on the relationships between different specific items of health literacy knowledge and skills. The purpose of this study is to determine the interrelationships of health literacy knowledge and skills in order to clarify which aspects of health literacy should be given more attention in college education. This will allow us to give more specific suggestions on the content of college health literacy education once the students are viewed comprehensively with respect to background factors.

METHODOLOGY

This research was conducted in the Changzhou Campus of Hohai University in Changzhou, Jiangsu Province of China. The inclusion criteria of this research consisted of freshman, sophomore, and junior

students of the Enterprise Management College in the Changzhou Campus of Hohai University, while the exclusion criteria were 1. respondents who obviously failed to fill out the questionnaires carefully and who made up data; and 2. respondents who could not fill out the MHLS properly. There were 210 university students in total who filled out the questionnaires from September 2017 to January 2018. We collected 210 questionnaires, 45 of which showed obvious irregularities. After the removal of these 45 cases, there were 165 valid cases left. The respondents were then classified into two groups: The 77 freshmen were defined as junior-grade students, the 88 sophomores and juniors as senior-grade students.

-Participants' Characteristics

The characteristics of the participants are shown in Table 1 (see Appendix-I). Though both genders were fairly well represented in the sample, more women participated than men. Different ages corresponded well with the students' year of study: Freshmen were 18-19 years old; sophomores were 19-20, and juniors were 20-21. As stated above, all of the respondents were undergraduates. The vast majority of the participants (93.9%) were Han Chinese and nearly two-thirds of the participants (66.1%) were from the eastern area of China, which is to be expected as Hohai University is located in Jiangsu, an eastern province. Moreover, the numbers of respondents who reported that they see a doctor seldom or occasionally are similar, 40.6 percent and 45.5 percent respectively, while students who see a doctor often are the fewest, making up only 13.9 percent.

-Data Collection

Potential participants were contacted through personal networks in order to ensure the credibility of this survey, eventually reaching 77 junior-grade students and 88 senior-grade students in the Business Management College of Changzhou Campus, Hohai University. The consenting 77 junior-grade students filled out the questionnaire during breaks in self-study at night, while the consenting 88 senior-grade students completed the questionnaire during breaks in optional courses with the consent of the teacher. As the questionnaire was long and graphic, we only offered the option of taking the survey in hard paper format rather than online because many students would be impatient and less inclined to fill out such a survey without compensation or course credit. After data collection, we manually keyed the outcomes into SPSS software for analysis.

-Statistical Methods

In this paper, we began with the fundamental overall health literacy condition of the students, and then investigated any differences between sample groups. How different sections contributed to the performance on other sections or overall is examined last. First, we analyzed the data in a basic

statistical analysis, including the means and standard deviations of the junior-grade and senior-grade groups, to understand their overall command of health literacy. Second, we used difference analysis to determine the differences between the junior-grade and senior-grade groups on the four sections of the survey. Third, we applied a series of difference analyses to find significant differences between the high-scoring and low-scoring groups of each section on the other sections. Fourth, Pearson's correlation analysis was applied to determine the intercorrelations of the scores on each section, aiming to exclude multi-collinearity among variables. Fifth, we examined how the performance on each section explained that on the other three sections using regression analysis. Lastly, interactive analysis, which put sections along different dimensions, was used to further study the inter-relationships of the four sections.

-Measurement

This article used the Mandarin Health Literacy Scale (MHLS) produced by Lee *et al*. (2012) which is a quantitative assessment tool of health literacy aimed at the general public whose mother tongue is Chinese. The MHLS was adjusted properly in this passage according to the Chinese adult Body Mass Index (BMI) classification standard published by China's Obesity Task Group. More specifically, the standard of adult obesity was applied to classify $24 \leq BMI < 28$ as overweight and $BMI \geq 28$ as obese (Du *et al*., 2010). Furthermore, the waist range of obesity was redefined as men with waists greater than or equal to 85 cm and women with waists greater than or equal to 80 cm. The questionnaires were graded according to the standard answers such that correct answers were scored one point each and incorrect answers zero. There are 50 items in total, for a total possible score of 50. The questionnaires consisted of four sections, the Health Education Passage, Outpatient Department Conversation, Medication Information, and Medical Service System Section, which contain 10, 12, 17, and 11 items, respectively. We entered the data provided by 165 students of the Enterprise Management College in Hohai University and performed a reliability analysis of the questionnaires using SPSS 19.0. The value of Cronbach's alpha was 0.864, which, being higher than 0.80, showed that these questionnaires display high reliability.

ANALYSIS AND RESULTS

The students were classified into junior-grade and senior-grade groups in this paper, as detailed above, in order to conduct the analysis with different background variables. The freshmen were defined as the junior-grade group and the sophomores and juniors as the senior-grade group.

Table 2 (see Appendix-II) shows that the junior-grade group earned higher scores on the Health Education Passage (9.5714±0.90943), Outpatient Department Conversation (10.9870±1.01946), and Medication Information (15.9481±2.13305) than the senior-grade group (9.5682 ± 1.12235, 10.9205

± 1.75657, and 15.4659±2.41618, respectively). At the same time, the range of fluctuation of the junior-grade group in these three sections is narrower than that of the senior-grade group. In the Medical Service System section, the senior-grade group scored higher (9.7273±1.75334) than the junior-grade group (9.3896 ± 1.34903), but the latter's range of fluctuation was still narrower.

As can be seen from Table 3 (see Appendix-III), the p-values of the scores on the Health Education Passage, Medication Information, and Medical Service System from Levene's Test for the equality of variances are all above 0.05, and the p-values of their t-test scores are also greater than 0.05. Thus, there is no statistically significant difference between the junior and senior-grade groups on these three sections. Furthermore, the p-value for Outpatient Department Conversation from Levene's Test is lower than 0.05. In this case, we choose the second line of t-test, or the p-values in the t-test, which are also larger than 0.05. Therefore, there is no evident difference between the two groups in the Outpatient Department Conversation either.

The students were divided in this paper into the high-scoring group and the low-scoring group in the Health Education Passage and Medication Information Sections by the median: The high-scoring group scored greater than or equal to the median, the low-scoring group below it. The Health Education Passage Section had 126 people in the high-scoring group and 39 in the low-scoring group, whereas the Medication Information Section had 123 people in the high-scoring group and 42 in the low-scoring group. In this case, a difference analysis of the correlations of the scores of these four groups with those on Outpatient Department Conversation and Medical Service System was carried out.

As seen in Table 4 (see Appendix-IV), the high-scoring group scored 11.28±0.85 and the low-scoring group 9.90±2.30 in the difference analysis between the Health Education Passage groups and the Outpatient Department Conversation. According to the difference analysis between the Health Education Passage groups and Medical Service System scores, the high-scoring group scored 9.89± 1.16, the low-scoring group 8.54±2.22. The significance of these results under Levene's Test for these two difference analyses is 0.001, lower than 0.05. Therefore, we adopted the second line of the t-test, where the p-value is below 0.05. It can be deduced that there are evident differences between the high-scoring and low-scorings groups of the Health Education Passage in their scores on the Outpatient Department Conversation and Medical Service System Sections.

The difference analysis of the scoring groups for Medication Information in the Outpatient Department Conversation Section reported in Table 5 (see Appendix-V) found that the high-score group scored 11.24 ± 0.92, the low-score group 10.09±2.23, whereas on the Medical Service System Section, their scores were 9.80±1.13 and 8.90±2.37, respectively. The significance values yielded by Levene's Test for the two difference analyses are all 0.001, lower than 0.05, in which case we adopted the second line of the t-test, showing a p-value below 0.05. Thus, there are statistically significant differences between

the high and low-scoring groups of Medication Information on the Outpatient Department Conversation and Medical Service System sections.

Table 6 (see Appendix-VI) shows that the correlation coefficients for the total score and each section are all above 0.70, indicating strong correlations. In the relationships among four sections, however, the correlation coefficients fall in the medium correlation range of 0.40 to 0.60, except for a weak correlation coefficient between Outpatient Department Conversation and Medical Service System of 0.346. The correlation coefficients from high to low were Health Education Passage and Outpatient Department Conversation (0.562), Outpatient Department Conversation and Medication Information (0.481), Health Education Passage and Medication Information (0.477), Outpatient Department Conversation and Medical Service System (0.476), and Health Education Passage and Medical Service System (0.408).

When exploring the inter-correlations of the sections of university students' heath literacy, this study set each section's scores as the dependent variable in turn, while the other three sections were treated as independent variables for regression analysis. As the correlation coefficients failed to show strong correlations in the Pearson matrix, the possibility of multi-collinearity among the variables is excluded.

In the Health Education Passage section, all variables reached a significance level of 0.05, indicating statistically significant influences. The other three sections can explain 39.4 percent of university students' performance on the Health Education Passage section, which indicates a low interpretation level and positive predictive power. In particular, the effect of the Outpatient Department Conversation on the Health Education Passage is the most significant of the three, with a regression coefficient of 0.286, while Medication Information shows the weakest influence with a regression coefficient of 0.089.

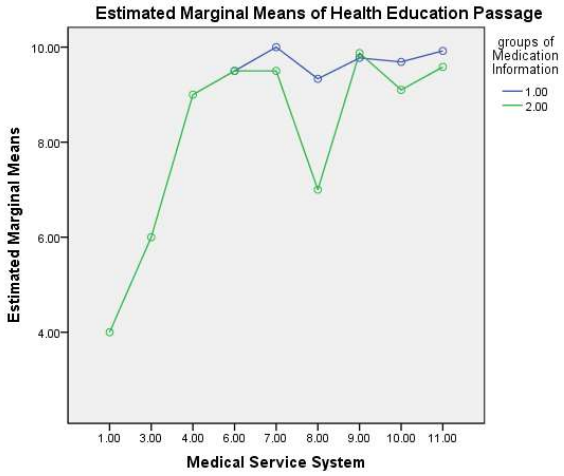
For the Outpatient Department Conversation section, we can conclude from Table 7 (see Appendix-VII) that only the Health Education Passage, the Medication Information, and the constant terms reach significance. The independent variables can explain 37.7 percent of university students' health literacy, with Outpatient Department Conversation having the highest effect with a low level of interpretation, and both Medication Information and Health Education Passage possessing positive predictive power. In the Medication Information section, while the constant terms do not reach significance, all three independent variables do. The other three sections predict 36.8 percent of the performance on Medication Information at a low interpretation level. The regression coefficients of the three independent variables are all between 0.40 and 0.50 with positive predictive power.

In the Medical Service System section, the p-values of the constant terms and Outpatient Department Conversation are greater than 0.05, and thus are not statistically significant. However, Health Education Passage and Medication Information have positive predictive ability, predicting 27.10 percent of the Medication Service System performance.

In order to determine whether there are interaction effects among different sections, we analyzed the

relationship between different combinations of the sections where possible. We also applied analysis of variance (ANOVA) to the section scores and grouping conditions (high and low-scoring groups) to determine that there was only one significant interaction.

As shown in Figure 1, there was a significant interaction effect between the group of Medication Information and Medical Service System on the Health Education Passage field. The performance on Medical Service is most significant, with f = 11.506 and p = 0.001. Moreover, the groups of Medication Information (high-scoring group = 1, low-scoring group = 2) are also significant, with f = 6.689 and p = 0.011. The interaction between Medical Service System and Medication Information plays an important role as well, with f = 3.407 and p = 0.006. The score range of the high-scoring group concerning the Medication Information is 4-11, with an average score in the range of 9-10, with high scores throughout. The fluctuation of the low-scoring group in the Medication Information Section is wider than that of the other group. The average score on the Health Education Passage increases sharply from 4 to 9 in the score range of 1 to 4 on the Medical Service System, while in the ranges of 4 to 7 and 9 to 11 on the Medical Service System the mean Health Education Passage remains stable at 9 to 11. The most noteworthy point is that the members of the low-scoring group on the Medical Service System who scored 8 achieved a mean score of only 7 on the Health Education Passage section (non-estimable means are not plotted).



Source: Study Analysis

Figure 1. Interaction Effects on Health Education Passage

DISCUSSION

The junior and senior-grade groups showed no significant differences in health literacy.

Analysis of the means and standard deviations and the *t*-test difference analysis between the senior and junior-grade groups of college university students allow us to conclude that two scoring groups had no significant difference in the performance of health literacy. More specifically, the means of the junior-grade group on the Health Education Passage, Outpatient Department Conversation, and Medication Information were all higher than those of the senior-grade group, while the senior-grade group scored slightly higher than the junior-grade group on Medical Service System. The achievements of these two groups on the four sections showed no significant differences.

This clearly indicates that the Health and Hygiene courses the university students received did not play an important role when they were at school, failing to raise students' self-care abilities and even possibly weakening them on this point. Thus, it is imperative to promote university students' health literacy and improve the status of health education.

The relationships between the university students' performances on Medical Service System and the other three sections were statistically non-significant.

The Pearson correlation coefficient analysis of different sections made it clear that the correlation coefficients of the Medical Service System and other three sections are all lower than those among the other three sections and indicated a rather small mutual influence.

As the knowledge covered by the Medical Service System section is more likely to be involved in severe diseases and their treatment than the other three sections, it appears that university students gain more accurate knowledge in terms of certain ailments but have little knowledge of certain matters of common awareness or about certain other severe ailments and their treatment. In consequence, the school should be more dedicated to the dissemination of information on severe diseases and their treatment in the normal course of college health literacy education in order to avoid errors when seeing a doctor in an emergency.

Outpatient Department Conversation and Medication Information had significant effects on the university students' health literacy performance.

In the regression analysis, different sections were successively selected as the dependent variables, with the rest serving as independent variables. It was found that regardless of the dependent variable, the correlation coefficient between Outpatient Department Conversation and Medical Service System was the smallest and made the minimum contribution to the dependent variable.

We divided the health education passage and the medication information scores by their medians into high-scoring and low-scoring groups. The results indicated significant differences between the

effects of these groups for Health Education Passage and for Medication Information on Outpatient Department Conversation and Medical Service System, respectively.

More specifically, the interactive analysis found that the high and low-scoring groups of Medication Information have a significant interactive effect with Medical Service System on Health Education Passage scores. Specifically, the scores of the high-scoring group of Medication Information were observed to be more stable in the two sections, while the low-scoring group shows a wider range and fluctuation.

It is reasonable to conclude that when university students perform well on Health Education Passage and Medication Information, it is possible that they will achieve good results on Outpatient Department Conversation and Medical Service System at the same time. Moreover, good performance on Outpatient Department Conversation and Medical Service System cannot explain the outstanding health literacy levels on Health Education Passage and Medication Information. Hence, as the Health Education Passage and Medication Information section scores showed a significant influence on the other sections, these sections in particular may contribute most to the overall level of university students' health literacy.

This paper applied different investigation tools as compared to the study conducted by Chiang, Yang, and Hsu (2015) or the study conducted by Lee (2013). The difference analysis and regression analysis focused on the relationships between different sections and paid less attention to the influences of the background factors.

The statistical analysis of the questionnaires allowed us to realize the aim of this research. It may be seen that the overall health literacy condition of university students is excellent, and interactions and perhaps a mechanism of influence were found among the different sections of university students' health literacy. As a result, we can provide suggestions for university students' health literacy education and solutions to outstanding problems when taking measures domestically to fill the gaps in university students' health literacy research.

There is no doubt that many limitations remain in this paper. First, the research was confined to one school due to geographic restrictions. Moreover, the background variables of the respondents do not show sufficient variability. Therefore, it is suggested that future studies should broaden the range of the respondents and investigate their background factors thoroughly for a more comprehensive analysis. If possible, well-directed health literacy questionnaires should be developed so as to understand the health literacy condition of university students in greater depth and provide data that can serve as a useful reference to promote university health education.

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Appendix–I

Characteristics	%	*n*
Gender		
Male	41.2	68
Female	58.8	97
Age		
18–19	29.1	48
19–20	17.6	29
20–21	53.3	88
Ethnicity		
Han	93.9	155
Minority	6.1	10
Hometown		
Eastern area	66.1	109
Central area	21.9	36
Western area	12	20
Frequency of seeing a doctor		
Seldom	40.6	67
Often	13.9	23
BMI		
Underweight	17.0	28
Healthy	69.7	115
Overweight	7.9	13
Obese	5.4	9
Chronic Illness (no)	93.9	155

Source: Calculated for this study

Table 1. Descriptive Statistics

Appendix-II

	Grades	*n*	Mean	*SD*	Standard Error Average
Health Education Passage	Junior	77	9.5714	.90943	.10364
	Senior	88	9.5682	1.12235	.11964
Outpatient Department Conversation	Junior	77	10.9870	1.01946	.11618
	Senior	88	10.9205	1.75657	.18725
Medication Information	Junior	77	15.9481	2.13305	.24308
	Senior	88	15.4659	2.41618	.25757
Medical Service System	Junior	77	9.3896	1.34903	.15374
	Senior	88	9.7273	1.75334	.18691

Source: Calculated for this study

Table 2. The Means and Standard Deviations of the Junior-Grade and Senior-Grade Groups

Appendix–III

		Levene's Test		*t*-test		
		f	***Sig.***	***t***	***df***	**Sig. (two-tailed)**
Health Education Passage	Equal variances assumed	.031	.860	.020	163	.984
	Equal variances not assumed			.021	162.08	.984
Outpatient Department Conversation	Equal variances assumed	4.908	.028	.292	163	.771
	Equal variances not assumed			.302	142.67	.763
Medication Information	Equal variances assumed	1.713	.192	1.350	163	.179
	Equal variances not assumed			1.361	162.99	.175
Medical Service System	Equal variances assumed	.020	.887	−1.371	163	.172
	Equal variances not assumed			−1.395	160.46	.165

Source: Calculated for this study

Table 3. The Difference Analysis of the Junior Grade and Senior Grade on the Four Sections

Appendix–IV

		Levene's Test		*t*-test		
		f	***Sig.***	***t***	***df***	**Sig. (two-tailed)**
Outpatient Department Conversation	Equal variances assumed	40.551	.000	5.639	163	.000
	Equal variances not assumed			3.667	41.211	.001
Medical Service System	Equal variances assumed	18.740	.000	4.986	163	.000
	Equal variances not assumed			3.644	44.592	.001

Source: Calculated for this study

Table 4. The Difference Analyses of the High-Scoring and Low-Scoring Groups on the Health Education Passage

Appendix-V

		Levene's Test		*t*-test		
		f	***Sig.***	***t***	***df***	**Sig. (two-tailed)**
Outpatient Department Conversation	Equal variances assumed	33.000	.000	4.689	163	.000
	Equal variances not assumed			3.248	45.831	.002
Medical Service System	Equal variances assumed	24.012	.000	3.245	163	.001
	Equal variances not assumed			2.353	47.542	.023

Source: Calculated for this study

Table 5. Difference Analysis of the High-Scoring and Low-Scoring Groups of Medication Information

Appendix–VI

	Questionnaire	Section A	Section B	Section C
Questionnaire	1			
Section A	.725	1		
Section B	.745	.562	1	
Section C	.857	.477	.481	1
Section D	.727	.408	.346	.476

Source: Calculated for this study
Note: n= 165; All correlations significant at the .001 level

Table 6. The Pearson Correlation Matrix for the Sections of University Students' Health Literacy

Appendix-VII

	Health Education Passage	***p***	**Outpatient Department Conversation**	***p***	**Medication Information**	***p***	**Medical Service System**	***p***
	Regression Coefficient		**Regression Coefficient**		**Regression Coefficient**		**Regression Coefficient**	
Health Education Passage			0.593	0.000	0.466	0.009	0.320	0.016
Outpatient Department Conversation	0.286	0.000			0.410	0.001	0.068	0.464
Medication Information	0.089	0.009	0.163	0.001			0.239	0.000
Medical Service System	0.112	0.016	0.049	0.464	0.436	0.000		
Constant Terms	3.976	0.000	2.252	0.013	2.568	0.076	2.017	0.060
	$R = 0.627$		$R = 0.614$		$R = 0.606$		$R = 0.520$	
	$R^2 = 0.394$		$R^2 = 0.377$		$R^2 = 0.368$		$R^2 = 0.271$	
	$F = 34.850$		$F = 32.408$		$F = 31.182$		$F = 19.938$	

Source: Calculated for this study

Table 7. Regression Analysis among Sections