The Relationship Between Health Literacy And Health Perception: Quantitative Research on Future Midwives

Sağlık Okuryazarlığı ve Sağlık Algısı İlişkisi: Geleceğin Ebeleri Üzerine Nicel Bir Araştırma

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ÖZET

Amaç: Sağlık okuryazarlığı, sağlık bilgilerine erişme, anlama ve kullanma becerisi olarak tanımlanırken, sağlık algısı bireylerin kendi sağlık durumlarını değerlendirmelerini ifade eder. Bu çalışmanın amacı, Türkiye'deki ebelik öğrencilerinin sağlık okuryazarlığı ile sağlık algısı arasındaki ilişkiyi incelemektir. **Gereç ve Yöntem:** Kesitsel tipte yürütülen araştırmanın Ocak 2023 ile Mart 2024 tarihleri arasında gerçekleştirilmiştir. Çalışmaya 353 öğrenci katılmıştır. Veriler, Öğrenci Bilgi Formu, Türkiye Sağlık Okuryazarlığı Ölçeği-32 ve Sağlık Algısı Ölçeği kullanılarak toplanmıştır. Mann-Whitney U, Spearman's rho korelasyonu ve Kruskal-Wallis testleri ile istatistiksel analizler yapılmıştır. **Bulgular:** sağlık okuryazarlığı ve sağlık algısı arasında anlamlı ilişki olduğunu göstermektedir ve gelecekteki ebeler arasında sağlık algısını ve sonuçlarını iyileştirmek için sağlık okuryazarlığını artırmanın önemini vurgulamaktadır. **Sonuç:** Çalışma, ebelik müfredatlarında hem sağlık okuryazarlığını hem de sağlık algısını güçlendirmek için hedeflenmiş sağlık eğitimi stratejilerinin önemine dikkat çekmektedir. Katılımcıların çoğunun yeterli sağlık okuryazarlığına ve olumlu sağlık algısına sahip olduğunu göstermektedir. İnternet kullanımı ve yazılı materyalleri okuma isteği gibi faktörlerin sağlık okuryazarlığı ve sağlık algısı üzerinde önemli etkileri olduğu bulundu Bu bulgular, ebelik öğrencilerinin sağlık okuryazarlığı seviyelerinin artırılmasının, hizmet verecekleri topluluklarda daha iyi sağlık sonuçlarına katkıda bulunabileceğini göstermektedir.

Anahtar kelimeler: Ebelik öğrencileri, Sağlık algısı, Sağlık eğitimi, Sağlık okuryazarlığı.

ABSTRACT

Objective: Health literacy is defined as the ability to access, understand and use health information, while health perception refers to individuals' assessment of their own health status. The aim of this study was to examine the relationship between health literacy and health perception among midwifery students in Turkey. **Materials and Method:** The cross-sectional study was conducted between January 2023 and March 2024. 353 students participated in the study. Data were collected using Student Information Form, Turkey Health Literacy Scale-32 and Health Perception Scale. Statistical analyses were performed with Mann-Whitney U, Spearman's rho correlation and Kruskal-Wallis tests. **Findings:** show a significant relationship between health literacy and health perception and emphasise the importance of increasing health literacy to improve health perception and outcomes among future midwives. **Conclusion:** The study highlights the importance of targeted health education strategies to strengthen both health literacy and health perception in midwifery curricula. It shows that most of the participants had adequate health literacy and positive health perception. Factors such as internet use and willingness to read written materials were found to have significant effects on health literacy and health perception. These findings suggest that increasing midwifery students' health literacy levels may contribute to better health outcomes in the communities they will serve.

Keywords: Midwifery students, Health perception, Health education, Health literacy**.**

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INTRODUCTION

Health literacy is defined as "the knowledge, motivation, and competencies required for people to access, understand, appraise, and apply health information to make informed judgments and decisions in everyday life concerning healthcare, disease prevention, and health promotion, ultimately maintaining or improving quality of life throughout the life course" (Sørensen et al., 2012). It is a significant social determinant of health, and low health literacy levels can pose substantial obstacles to accessing healthcare services (Berkman et al., 2011). It was emphasized that low health literacy can hinder individuals from effectively navigating healthcare systems, thereby limiting their ability to utilize available health resources (Gür et al., 2021). Moreover, health literacy is more effective than socioeconomic factors in determining an individual's health status (Shahid et al., 2022; Uysal et al., 2020).

Health perception can be important while evaluating the health literacy level. It is defined as an individual's evaluation of their health (Çaka et al., 2017), this concept is correlative with the process of an individual gaining healthy lifestyle behaviors and improving overall health (Açıksöz et al., 2013; Citak Tunc et al., 2021). Health perception is a key factor that has impacts individuals' health behaviors (Açıksöz et al., 2013; Çaka et al., 2017).

Midwifery students, due to their professional roles, have the potential to enhance both individual and community health perceptions and literacy levels. As future healthcare professionals, possessing a high level of health literacy can improve their health management and increase their capacity to provide health education to their clients (Kerkez & Sahin, 2023). Individuals with a high level of health literacy are more likely to prioritize preventive health services and engage in positive health behaviors (Erguni 2017). In this context, enhancing the health literacy levels of midwifery students can improve their health outcomes and contribute to better health outcomes in the populations they will serve in the future.

With this understanding, this study aims to explore the correlation between midwifery students' health literacy and health perception levels.

METHODS

Design

The research design is descriptive and cross-sectional. This study was conducted with a sample of 376 midwifery students selected from a population of 17,595 midwifery students across Türkiye (Council of Higher Education (YÖK) Number of Students by Education Levels and Units, 2021 – 2022) using a simple random sampling method. The sample size was calculated using G-Power software, with a 95% confidence interval and a 5% margin of error and effect

size was 0.17. This method aimed to achieve a sample size sufficient to represent the population. The inclusion criteria for participants were being a midwifery student, having no communication problems, agreeing to participate in the study, and completing all the forms. These criteria were chosen to enhance the representativeness of the sample and minimize bias. The exclusion criteria are to be under the age of 18 and having mental problems.

Data collection

Data collection tools included the Student Information Form, the Turkey Health Literacy Scale-32 (THLS-32) and Health Perception Scale (HPS).

Student Information Form

This form was prepared by the researchers using the relevant literature (Ergün, 2017; Kerkez & Şahin, 2023; Kuloğlu & Uslu, 2022). It included questions about socio-demographic characteristics of the students (age, educational level, health status and questions about health perception etc.).

Turkey Health Literacy Scale-32 (THLS-32)

THLS-32 is a scale which type is self-report developed to evaluate health literacy in people over the age of fifteen and who are at least primary school graduates (Abacıgil et al., 2016; Sørensen et al., 2015). The overall internal consistency coefficient was 0.927. The Cronbach Alpha coefficient of "Treatment and Service" Sub-Dimension is 0.880. The Cronbach Alpha coefficient of the second dimension, "Preventing Diseases and Promoting Health", is 0.863. In our study, the Cronbach's Alpha coefficient of the scale was found to be 0.962. The conceptual framework includes two health-related dimensions (treatment, disease prevention, and health promotion) and four information acquisition processes (access, understanding, evaluation and use/application) related to health-related decision-making and practices. Each item is rated on a 4-point scale: 1=Very easy, 2=Easy, 3=Difficult, 4=Very difficult. Option 5 was used for the expression "I have no idea". Before proceeding with the score calculations, the codes were recoded as 1-4 and 4-1. For ease of calculation, the total score has been standardized to take a value between 0 and 50 with the help of the formula below. According to the scale 0-point equals the lowest health literacy and 50 points equals to the highest health literacy. THLS levels were evaluated in four categories according to the scores like (Abacigil et al., 2016):

(0-25) points : insufficient

(>25-33) : problematic – limited

(>33-42) : adequate   (>42-50) : excellent

Health Perception Scale (HPS)

HPS was developed by Diamond and his colleagues in 2007 (Diamond, 2007). HPS is a five-point Likert -type scale consisting of 15 items and four subfactors (Center of Control, Self-Awareness, Certainty, and Importance of Health). The validity and reliability study of the scale was conducted by Kadioglu and Yildiz (2012). The 1st, 5th, 9th-11th and 14th items of the scale are positive; Items 2-4, 6-8, 12, 13 and 15 are negative statements. Positive statements were scored as "strongly agree = 5", "agree = 4", "undecided = 3", "disagree = 2", and "strongly disagree = 1". Negative statements were reverse scored. The minimum score is 15, and the maximum score is 75 (Kadioglu and Yildiz, 2012). In our study, the Cronbach's Alpha coefficient of the scale was found to be 0.73.

Data collection

The online survey link for the research (Google Forms) was shared with the students via Instagram and WhatsApp applications. The first page of the survey form included a provided consent form. Students who confirmed continued with the survey. The survey took approximately 10 minutes to complete. The data was collected between January 2023 and March 2024.

Statistical Analysis

Data analysis was performed with IBM SPSS v25. The normality of the data was tested via the Kolmogorov-Smirnov according to our sample size. The Mann-Whitney U test was used to compare two independent groups because the data were not normally distributed. For comparing three or more groups, a one-way analysis of variance was used for normally distributed data, and the Kruskal Wallis test was used for non-normally distributed data. After the Kruskal-Wallis's test, whether there was a difference between the groups was examined with the Dunn test. The correlation between variables is Spearman's because the data are not normally distributed. It was examined by rho correlation. Frequency and percentage were used as descriptive statistics for categoricaldata. Descriptive statistics for quantitative data were presented as given as mean±standard deviation and median (minimum-maximum). The significance level was taken as $p < 0.05$.

Ethical Considerations

The Declaration of Helsinki was adhered to during the research process, and ethics committee approval was obtained from Balıkesir University Non-Interventional Committee of Ethics on 06.12.2022 with decision number 2022-114. The participants were informed that the data collected would be used solely for scientific purposes, that the data would remain anonymous, and that they could withdraw from the study at any time. Informed consent was given on the

first page of the online form. Students confirm the informed consent page before the data collection forms.

RESULTS

A total of 353 midwifery students were included in the present study. The median age of the participants was 20, with 35.4% residing in Central Anatolia and 43.9% being in the first grade. Eighty-one percent of the students were graduates of Anatolian High School, 79.3% had mothers who were not employed, and 80.2% whose father's work. 66.9% of the students ' income is equal to their expenses, 95.2% didn't have a chronic disease and 93.8% didn't use medication. The average THLS score of the participants had 33.61, which shows that most of the participants had an adequate level of THLS. However, the wide range of score distribution (0-50) suggests that some participants may have been inadequate in health literacy. The participants' average health perception level was 51, which indicates that the participants' health perceptions are generally positive. Likewise, most students (96%) rated their general health status as "positive" (Table 1).

Table 1. Descriptive Statistics

Variables	Mean± S.D	Median (min-max)
Age	20.01 ± 1.85	20 (18 - 36)
HPS Total Score	51±0.25	51 (38 - 64)
THLS Total Score	33.61 ± 0.46	33.33 (0 - 50)
Enjoying Reading Written Materials	6.38 ± 2.15	6 (1-10)
	Frequency	**Percentage**
The region where your university is located		
Mediterrenian	57	16.1
Black sea	1	0.3
Aegean	42	11.9
Marmara	122	34.6
Eastern Anatolia	5	1.4
Southeastern Anatolia	1	0.3
Central Anatolia	125	35.4
Class		
1st grade	155	43.9
2nd grade	128	36.3
3rd grade	46	13
4th grade	24	6.8
Type of high school last graduated from		
General	11	3.1
Science	30	8.5
Anatolian	286	81
Vocational	9	2.5
Health vocational	17	4.8
Mother's income-generating employment status		
Yes	73	20.7
No	280	79.3
Father's income-generating employment status		
Yes	283	80.2
No	70	19.8

Table 1 (Continue). Descriptive Statistics

income status		
Our income is less than our expenses	64	18.1
Our income equals our expenses	236	66.9
Our income is more than our expenses	53	15
Presence of a chronic disease		
Yes	17	4.8
No	336	95.2
Presence of regularly used medication		
Yes	22	6.2
No	331	93.8
Evaluation of health in general		
Perfect	10	2.8
Very good	74	21
Good	254	72.2
Bad	14	4

When the distribution of HPS and THLS scores was examined according to various demographic variables, there were no significant differences among variables such as age, university location, class level, region of longest residence, and chronic disease status (p>0.05). However, the HPS scores differed significantly in terms of internet use to access health-related information and liking for reading written materials (p=0.04) (Table 2).

Table 2. Distribution and Relationship of THLS and HPS Scores According to Various Demographic Variables

Variable	THLS (mean± s.deviation)	THLS (median (min-max)	HPS (mean± s.deviation)	HPS (median (min-max)
Region where the university is located				
Mediterranean	34.41 ± 6.61	33.33 (18, 23 - 50)	50.7 ± 4.48	51 (38 - 61)
Aegean	31.16 ± 9.36	30.54 (0 - 50)	50.19 ± 4.48	50.5 (43 - 61)
Marmara	33.52 ± 9.00	33.33 (0 - 50)	50.77 ± 4.92	50 (38 - 64)
Eastern Anatolia	30.63 ± 13.72	30.21 (15- 49)	51.8 ± 6.76	49 (45 - 62)
Central Anatolia	34.00 ± 8.06	33.33 (6.45 - 50)	51.54 ± 4.34	52 (42 - 64)
Test statistic	5,039		0.926	
p	0.283^{x}		0.449^{y}	
Class				
1st grade	33.69 ± 7.81	33.33 (0 - 50)	50.9 ± 4.67	51 (38 - 61)
2nd grade	33.83 ± 8.58	33.33 (3, 33 - 50)	51.23 ± 4.39	51 (42 - 64)
3rd grade	32.21 ± 8.26	33.07 (15, 63 - 50)	49.67 ± 3.88	49 (43 - 58)
4th grade	34.45 ± 12.26	33.33 (0 - 50)	52.92 ± 6.08	51.5 (44 - 64)
Test statistic	1,723		5,883	
p	0.632		0.117	
Longest Living Region				
Mediterrenian	33.95 ± 8.65	33.33 (0 - 50)	51.25 ± 4.88	51 (38 - 64)
Black sea	33.16 ± 8.25	33.33 (13, 54 - 50)	50.96 ± 4.64	51 (43 - 62)
Aegean	31.82 ± 8.94	32.81 (0 - 50)	50.66 ± 4.33	51 (43 - 62)
Marmara	34.59 ± 7.46	33.33 (15, 63 - 50)	51.3 ± 4.62	51 (43 - 64)
Eastern Anatolia	32.83 ± 6.63	33.07 (19.79- 42.71)	51.5 ± 4.76	50 (46 - 60)
Southeastern Anatolia	34.87 ± 12.50	33.85 (3, 33 - 50)	51.86 ± 5.44	50.5 (45 - 64)
Central Anatolia	33.41 ± 8.15	32.81 (6.45 - 50)	50.6 ± 4.42	51 (38 - 61)
Test Statistics	4,128		0.813	
p	0.659		0.992	
Chronic Disease Status				
Yes	33.24 ± 7.63	32.76 (16, 15 - 50)	51 ± 5.63	51 (42 - 62)
No	33.62 ± 8.54	33.33 (0 - 50)	51 ± 4.57	51 (38 - 64)
Test Statistics	2713,500		2827,500	
p	0.805		0.945	
Internet Usage Status to Access Health-Related Information				
Always	34.16 ± 8.87	33.33 (0 - 50)	51.42 ± 4.91	51 (38 - 64)
Sometimes	33.00 ± 8.11	32.81 (0 - 50)	50.78 ± 4.31	51 (38 - 64)
Rarely	35.97 ± 8.97	33.33 (21, 51 - 50)	50.13 ± 4.67	52 (43 - 55)
Test Statistics	16,518		18,060	
p	0.057		0.034	
Age				
Test Statistics	0.003		0.005	
p	0.962		0.927	
Liking Written Materials				
Test Statistics	0.175		0.154	
p	0.001*		0.004*	

x Kruskal Wallis test; y One-way analysis of variance, Mann Whitney U test, Spearman's rho Correlation, p < 0.05

The sub-dimensions of the HPS and the THLS were related. Specifically, the correlation between certainty and control center was (r=0.298, p=0.001), between certainty and the HPS total score was (r=0.564, p=0.001), between the importance of health and (r=0.421, p=0.001), and between self-awareness and (r=0.575, p=0.001). Additionally, between the THLS and HPS scores were related (r=0.352, p=0.001) (Table 3).

General health evaluation and the total score of the HPS were negatively correlated (r=-0.133, p=0.013). Additionally, between the general health assessment and the THLS total score were correlated negatively (r=-0.063, p=0.243) (Table 3).

Table 3. Correlation and Significance Values Between the Sub-Dimensions of the HPS, the THLS, and the Evaluation of General Health

	Control Center	Precision	Importance of health	Self-awareness	HPS total score	THLS total score
Control center	1					
Precision	0.298* <0.001**	1				
Importance of health	-0.138* 0.01**	-0.116* 0.03**	1			
Self-awareness	0.049* 0.363**	0.033* 0.534**	0.311* <0.001**	1		
HPS total score	0.559* <0.001**	0.564* <0.001**	0.421* <0.001**	0.575* <0.001**	1	
THLS total score	0.132* 0.014**	0.262* <0.001**	0.168* 0.002**	0.214* <0.001**	0.352* <0.001**	1
Assessing general health	0.121* 0.023**	-0.064* 0.231**	-0.216* <0.001**	-0.117* 0.028**	-0.133* 0.013**	-0.063* 0.243**

*Spearman's Rho Correlation Coefficient, * r value, ** p value*

DISCUSSION

Health literacy and health perception are key concepts that influence individuals' health behaviors, access to health services, and overall health status (Sørensen et al., 2012). The results of this study provide valuable data to understand the dynamics between the concepts of health literacy and the health perception of midwifery students, who will play a critical role in public health in the future, and to contribute to health education policies.

Health literacy encompasses individuals' abilities to understand, evaluate, and use health information (Rueda-Medina et al., 2020) When the health literacy levels of the students were evaluated in general in the study, it was seen that most of them had sufficient levels of health literacy. Similarly, in the study (Coşkun & Cesur, 2023), the health literacy levels of midwifery students were found to be sufficient. However, it was stated that 40% of university students (Ergün, 2017), in another study it was stated that 50% of the general population (Kendir

Çopurlar et al., 2017), and in another study it was stated that 30% of health professionals have insufficient health literacy (Rueda-Medina et al., 2020). These studies indicate that the level of health literacy is affected by various demographic factors (Ergün, 2017; Kendir Çopurlar et al., 2017; Rueda-Medina et al., 2020). Uysal et al. (2020) found that health education in university students was associated with the level of health literacy. The wide range of health literacy score distribution in the study can be explained by the fact that most of the students are first-grade students. First-year students may not yet have sufficiently developed their health knowledge, which may contribute to differences in health literacy levels.

Health perception refers to how individuals evaluate their health status. In our study, the health perception levels of the participants were examined, and it was seen that demographic factors did not have a significant effect on this perception. This result shows that health perception is shaped mostly by individual and psychological factors. Similar results are supported by the literature (Nutbeam, 2000; Sørensen et al., 2012). In this context, the importance of psychosocial support programs and individual awareness training should be emphasized to improve individual health perception.

In this study, no significant differences were found between health literacy and health perception across variables such as age, the region where the university is located, class level, the region where one has lived the longest, and chronic disease status. Like our finding, in a study (Uysal et al., 2020), there was no relationship between the health literacy levels of students and demographic variables. However, in the study, the HPS scores showed significant differences in terms of internet use to access health-related information and liking to read written materials. Participants who always use the Internet to access health information had higher health perception scores. This finding shows that internet use can positively affect health perception. The findings that internet use affects health perception are supported by Norman and Skinner (Norman & Skinner, 2006), which states that the internet is an important tool in accessing health information. It was emphasized that the internet plays an important role in the lives of higher education students, including searching for health information (Osei Asibey et al., 2017). Again, in a study conducted among university students in Greece, it was found that health literacy may be correlative with factors in accessing health information (Vozikis et al., 2014). On the other hand, Şengül et al. (2017) found that although students' internet usage was high, it was not sufficient to increase their e-health literacy levels. In a study, it was stated that health literacy is a general concept, independent of demographic factors (Sørensen et al., 2015). Therefore, it is thought that individual-specific approaches should be exhibited in health education. A low positive correlation was found between a preference for written materials and

both health literacy and health perception. This shows that individuals who enjoy reading written materials are more open to health information and can better evaluate this information. Furthermore, it is emphasized that health literacy is related to an individual's ability to access health information sources and evaluate this information (Doğan & Çetinkaya, 2019).

In the study, the health literacy and health perception levels of students who evaluated their general health status as very good were higher than those who evaluated their general health status as average or good. Similar results are found in different studies (Doğan & Çetinkaya, 2019; Kerkez & Şahin, 2023). In this regard, it can be said that increasing students' health literacy levels can contribute to improving their general health perceptions and health behaviors. Increasing educational programs and resources to improve health literacy will strengthen individuals' ability to understand, evaluate, and use health information.

When the relationships between health perception and its sub-dimensions and health literacy were examined, a positive significant relationship (r=0.298, p=0.001) was found between the control center and certainty. This finding suggests that when individuals have a sense of control over their health, their certainty about their health increases. This result indicates that a sense of control over health perception enhances individuals' ability to understand and use health information more effectively (Norman & Skinner, 2006). HPS total score and certainty were related (r=0.564, p=0.001), as well as the importance of health (r=0.421, p=0.001) and self-awareness (r=0.575, p=0.001). These results reveal that when individuals evaluate their health as important and are self-aware, their overall health perceptions become more positive. These findings indicate that health perception can be strengthened by individual awareness and the capacity to access health information (Sørensen et al., 2012). A significant positive relationship (r=0.352, p=0.001) was found between the total scores of the THLS and the HPS. This suggests that high health literacy positively influences health perception. Individuals with a high ability to understand and use health information tend to evaluate their health status more positively (Akça et al., 2020; Durmaz et al., 2020; Rueda-Medina et al., 2020; Yiğitalp et al., 2021). However, in a study conducted on nursing students, there wasn't a significant difference between students' health literacy levels and health perceptions (Uysal et al., 2020).

A significant negative relationship (r=-0.133, p=0.013) relationship was found between general health assessment and HPS total score. This result shows that individuals who evaluate their general health status as poor have lower health perception. Similarly, a negative significant relationship (r=-0.063, p=0.243) was detected between general health assessment and THLS total score. Individuals with poor health perceptions have a limited ability to understand and use health information, which may contribute to low health literacy (Tokuda et al., 2009). These

findings show that poor perception of general health status can negatively affect health literacy levels. In this context, reorganizing health education programs to improve students' health literacy and health perception may enable health professionals to become more conscious and effective individuals in the future.

In a study on 307 midwives to evaluate maternal health literacy and promote their informational skills. The study revealed that most midwives do not try to support maternal health literacy and need further training on this subject. This finding is also of great importance for midwifery students. During midwifery education, equipping students with knowledge and skills to increase maternal health literacy will improve the health outcomes of both mothers and babies (Creedy et al., 2021).

Limitations of the Research

Although this study provides valuable insights into the relationship between health literacy and health perception, several limitations should be acknowledged. First, data were collected from 501 students. However, due to technical issue as an online form corruption, 148 students' forms did not complete all forms, resulting in a final sample of 353 students. A normality test was conducted, and some variables were found to be non-normally distributed, requiring the use of non-parametric statistical methods where applicable. Secondly, the assessments of health literacy and health perception were based on self-reported data, which may introduce bias and raise concerns regarding the accuracy of the responses. Additionally, the study employed a cross-sectional design, with data collected at a single point in time, limiting the ability to draw definitive conclusions about the causal relationships between health literacy and health perception.

CONCLUSION

The research findings indicate that most midwifery students possess adequate levels of health literacy and have generally positive health perceptions. Analyses reveal that individuals with a strong ability to comprehend and utilize health information are more likely to evaluate their health status favorably. Furthermore, factors such as a preference for written materials and internet usage have been shown to influence health perception. Students can be informed about accurate online platforms. These findings highlight critical considerations for health education and policy development.

In conclusion, enhancing health literacy has the potential to improve population health and economic stability by enabling individuals to respond more efficiently and effectively to health crises. Integrating knowledge and skills that enhance THLS and HPS during midwifery

education can lead to better health outcomes for both mothers and infants. Therefore, it is recommended that midwifery education programs be reviewed and updated accordingly.

Conflict of Interest
The authors declare no conflict of interest regarding the publication of this study.

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Authors Contributions
Research Idea/Concept: SS
Research Design: SS, TK
Supervision/Consultancy: SS
Data Collection and/or Processing: SS, TK
Analysis and/or Interpretation of Data: SS
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Critical Review: SS

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