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# The relationship between health literacy levels and genital hygiene behaviors in female university students

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## ABSTRACT

**Introduction and aim.** This study investigates the correlation between health literacy levels and genital hygiene behaviors among female university students.

**Material and method.** A descriptive-correlational study was conducted with 348 female students who voluntarily participated. Data were collected through an online survey comprising participant information forms, the Health Literacy Scale, and the Genital Hygiene Behaviors Scale. Statistical analyses, including descriptive statistics, chi-square test for categorical data, and correlation analyses, were performed using SPSS version 26.0.

**Results.** The mean age of the participants was  $21.92 \pm 2.51$  years. The average scores on the Health Literacy Scale and Genital Hygiene Behaviors Scale were  $106.0 \pm 17.9$  and  $86.73 \pm 10.13$ , respectively. Significant differences were observed in genital hygiene behavior scores concerning participants' field of study and bathing habits. Furthermore, a moderately significant positive correlation was found between women's health literacy scores and genital hygiene behavior scores.

**Conclusion.** The study reveals a positive association between high health literacy levels and adequate genital hygiene behaviors among women. As women's health literacy improves, their genital hygiene behaviors also enhance positively. Access to reliable health information resources is crucial to ensure accurate knowledge acquisition regarding genital hygiene practices.

**Keywords.** genital hygiene, health literacy, university students, women

## Introduction

Genital hygiene is crucial for women's health preservation. When genital hygiene is improperly maintained, it can lead to diseases such as glomerulonephritis, cystitis, endometriosis, and oophoritis.<sup>1</sup> These diseases can lead to physiological health problems such as ectopic pregnancy, sepsis, cervical cancer, infertility, and psychological health problems such as fear and anxiety.<sup>2,3</sup> Among the reasons for women seeking gynecology clinics, urogenital infections are the most common.<sup>3</sup> The period between 15 and 24 is crucial for developing gender characteristics and transitioning to adulthood. This period is essential in terms of acquiring habits that need to be gained in the health field, and it is also a period at risk for health.<sup>4,5</sup> Particularly among university-aged students, residing in densely populated environments such as dormitories or shared housing may lead to inadequate attention to genital hygiene, potentially increasing the risk of genital infections.<sup>2,6</sup> Additionally, individuals' misconceptions, beliefs, practices, values, habits, body perceptions, socio-economic and cultural backgrounds, knowledge gaps, personal preferences, existing health conditions, physiological stages (such as menstruation, pregnancy, postpartum period, etc.), familial factors, and the physical and social characteristics of the environment can influence an individual's reproductive health.<sup>7,8</sup> These factors play a significant role in determining an individual's genital hygiene habits and overall health status. Furthermore, individuals' reluctance to discuss topics related to women's genital health and hygiene can lead to problems being left unaddressed, potentially resulting in serious reproductive health issues.<sup>2,4,6,7</sup> According to the literature, over the past decade, between 16.5% and 40.3% of university students have been reported to make mistakes in perineal hygiene.<sup>3-5,8,9,10</sup> Incorrect perineal hygiene increases the risk of urinary tract infections in women.<sup>10</sup> Therefore, individuals should be knowledgeable about and practice proper genital and menstrual hygiene to develop desired health-preserving behaviors and correct misunderstandings.<sup>11</sup> The most significant factor in the development of genital infections is incorrect genital hygiene practices due to a lack of knowledge.<sup>7</sup> Bridging this knowledge gap and accessing accurate information ensures that women have sufficient health literacy levels.<sup>8</sup>

Health literacy refers to the ability of individuals, families, and communities to access, understand, evaluate, and use information and services needed to make effective decisions about health.<sup>14</sup> Having a high level of health literacy at the societal level improves health and increases society's life expectancy.<sup>15</sup> Health literacy is essential in promoting and developing health and preventing diseases and has been proven to be important in various scientific studies.<sup>16-18</sup> Promoting health and preventing diseases requires that individuals understand and use information related to health. A healthy lifestyle promoting health requires control over all behaviors affecting health.<sup>19</sup> Health literacy contributes to developing an individual's ability to participate in activities promoting health. Health literacy enhances the ability of a woman to engage in health-promoting activities.<sup>20</sup> The health literacy level of university-aged female students must be high, enabling them to make more informed decisions about their health, adopt healthier behaviors, undergo

regular health check-ups, prioritize general and personal hygiene, and keep their vaccinations up-to-date.<sup>21</sup> Therefore, having a high level of health literacy is crucial for their health and increasing public health awareness. Therefore, it is essential to develop and support health literacy. A study conducted to determine the health literacy level of individuals aged 18 and over living in Turkey with the "Turkey Health Literacy Level and Related Factors Study" reported that 30.9% had inadequate health literacy, and 38% had problematic-limited health literacy.<sup>22</sup> Thus, approximately 7 out of 10 people in Turkey were found to have inadequate or limited health literacy levels.<sup>22</sup> A study conducted in the United States found that individuals with a high level of health literacy had higher rates of using preventive health services.<sup>23</sup> Increasing health literacy levels would be beneficial for individuals to use resources correctly and significantly impact both individual and public health in terms of improved health. The effects of increasing the health literacy level of individuals on societal and economic levels are high.<sup>24</sup>

Studies have shown that women with high health literacy levels are more likely to follow written and visual content related to health and hygiene behaviors, and they have a better understanding of proper hygiene practices.<sup>25</sup> Studies have indicated that individuals with a higher level of education tend to exhibit better genital hygiene practices.<sup>8</sup> When reviewing the literature, it becomes evident that studies emphasize the critical importance of genital hygiene for women's health.<sup>2-6</sup> However, a limited number of studies in the literature have specifically examined the significant association between genital hygiene practices and health literacy in women.<sup>6-8,24,37</sup> Most of these studies have focused on married women, pregnant women, or those studying in the health field.<sup>6-8,24,37</sup> Research exploring the relationship between genital hygiene behaviors in female university students and associated factors, as well as their levels of health literacy, remains scarce. Acquiring proper genital hygiene habits during university years can contribute to the prevention of common sexual health issues often encountered during this period. Female students should possess adequate health literacy levels to access and utilize accurate information to enhance their genital hygiene behaviors. Therefore, understanding the impact of health literacy levels on genital hygiene behaviors among female university students is crucial for filling a significant gap in this field.

## **Aim**

This study aims to examine the relationship between the health literacy levels and genital hygiene behaviors of female university students.

## ***Research questions***

- What are the health literacy levels of female university students?
- What are the genital hygiene behavior levels of female university students?
- Is there a relationship between the health literacy of female university students and their genital hygiene behaviors?

## **Material and methods**

### ***Study Design***

This study is a descriptive-correlational research.

### ***Sample***

This descriptive study was conducted on female university students at a state university in the Western Black Sea region. A total of 8142 female students studying at a state university in the Western Black Sea region in the 2022–2023 academic year constitute the research universe. The sample size of the research was calculated as 311 female students using the OpenEpi program with a confidence level of 95%, taking into account that the inadequate health literacy level of Turkish society was 30.9% in the Turkey Health Literacy Level and Related Factors study conducted by the Ministry of Health, Health Development General Directorate.<sup>22,27</sup> Email addresses, social media accounts, student club groups, and online class groups of students at the university were used to reach out to the participants. A total of 348 female university students who agreed to participate in the study were included in the research.

### ***Inclusion criteria***

- being a female student enrolled in undergraduate or associate degree programs at the university where the research was conducted,
- being 18 years of age or older,
- having no verbal communication barrier,
- not having any intellectual disabilities.

### ***Data collection***

The research data were collected from 348 female students who met the inclusion criteria and volunteered to participate in the research at a state university in the Western Black Sea region during the 2022–2023 academic year. The data was collected using an online survey form (Google Form) through convenience sampling. The data was collected by sending the link to the study via email to female students' school email addresses, sending the link through instant messaging applications to class representatives of faculties and departments, and sharing the link on the social media pages of university student clubs. Instructions were prepared on topics such as using the data within the scope of the research, keeping their identity information confidential, and obtaining informed consent.

### ***Data collection instruments***

#### ***Questionnaire form***

The questionnaire includes questions about the demographic characteristics of the participants and questions created by the researchers based on the literature.<sup>19,25,26,28</sup>

#### *Health Literacy Scale*

The Turkish validity and reliability of the Health Literacy Scale were established by Aras and Bayık Temel.<sup>29</sup> The Health Literacy Scale consists of 25 items and four subheadings: access to information (5 items), understanding of information (7 items), valuing/evaluating information (8 items), and application/usage (5 items). The minimum score for the entire scale is 25, and the maximum is 125. Participants answered the scale items using a Likert scale as follows: "1: I am unable to do it/ I have no ability at all/ impossible, 2: I have much difficulty, 3: I have some difficulty, 4: I have a little difficulty, 5: I have no difficulty at all." All items on the scale are positively structured, and there is no reverse item coding. The reliability coefficient of the scale, Cronbach's alpha, was reported as 0.92, and the sub-dimensions alpha values ranged from 0.62 to 0.79.<sup>29</sup>

#### *Genital Hygiene Behaviors Scale*

The scale developed by Karahan was used to assess genital hygiene behaviors in women and consists of 3 sub-dimensions: general hygiene, menstrual hygiene, and awareness of abnormal findings, with a total of 23 items. The Cronbach's alpha value for all items on the scale was found to be 0.80, while the Cronbach's alpha values for the General Hygiene Subscale, Menstrual Hygiene Subscale, and Awareness of Abnormal Finding Subscale were 0.70, 0.74, and 0.81, respectively.<sup>30</sup>

#### *Ethics approval*

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee (2023-SBB-0020) and the institution where the study would be conducted (E-12240456-605.01-2300026644). All participants provided both written and verbal consent before their involvement.

#### *Statistical analyses*

The data were analyzed using the SPSS 26.0 program (IBM, Armonk, NY, USA). Descriptive statistics (percentage, mean, standard deviation, minimum, and maximum) were used for the questionnaire and the TSOY-32. Data were tested for normality analysis with Kolmogorov–Smirnov tests. Since the data did not show normal distribution due to the analysis, non-parametric tests (Kruskal-Wallis, Mann-Whitney U) and Spearman correlation test were used. The significance level was calculated as  $p < 0.05$ .<sup>31</sup>

## Results

Among the female students who participated in this study, 64.9% are enrolled in undergraduate programs, 29.6% are in health sciences faculties, and 36.5% are in their second year of study (Table 1). Female students have the highest access to health-related information through the Internet (83.9%) and the lowest access through their friends (17.8%) (Table 1).

During their menstrual period, 89.7% of the women use sanitary pads (Table 1). About 50.9% of the participants reported receiving genital hygiene education, with 27% receiving it from their families and 15.5% from healthcare professionals (Table 1). When asked about their bathing habits, 81% of the participants reported taking showers while standing (Table 1).

**Table 1.** Socio-demographic characteristics of the students (n=348)\*

<b>Variables</b>	<b>n</b>	<b>%</b>	
<b>Departments of university</b>	Faculty of Health Science	103	29.6
	Faculty of Arts and Sciences	34	9.8
	Faculty of Educational Sciences	26	7.5
	Health Vocational High-School	60	17.2
	Faculty of Economics and Administrative Sciences	17	4.9
	Faculty of Sports Sciences	14	4
	Faculty of Islamic Studies	17	4.9
	Faculty of Engineering	36	10.3
	Vocational High School	41	11.8
	<b>Degree</b>	1	79
2		127	36.5
3		58	16.7
4		84	24.1
<b>Marital status</b>	Single	320	92
	Married	28	8
<b>Level of income</b>	Less	72	20.7
	Middle	226	64.9
	High	50	14.4
<b>Employment status</b>	Employee	55	15.8
	Not employee	293	84.2
<b>Smoking</b>	Yes	95	27.3

	No	253	72.7
<b>Alcohol</b>	Yes	46	13.2
	No	302	86.8
<b>Chronic illness</b>	Yes	38	10.9
	No	310	89.1
<b>Regular use of medication</b>	Yes	44	12.6
	No	304	87.4
<b>Ways to access information<sup>a</sup></b>	Internet	292	83.9
	Health Professionals	242	69.5
	Friend	62	17.8
	Book-magazine-brochure	150	43.1
	Family-relatives	152	43.7
	TV-Radio	89	25.6
<b>Daily pad usage</b>	Yes	171	49.1
	No	177	50.9
<b>Material used during menstruation</b>	Sanitary Pad	312	89.7
	Clean Cotton	11	3.2
	Pads	10	2.9
	Menstrual Cup	15	4.3
<b>Status of receiving education on genital hygiene</b>	Yes	177	50.9
	No	171	49.1
<b>Who gave the genital hygiene training?</b>	Friends	17	4.9
	Health Professionals	54	15.5
	Internet	28	8
	Family members	94	27
<b>The ways of taking a bath</b>	Sitting down	56	16.1
	Shower	282	81
	Tub	10	2.9

\*<sup>a</sup> – participants gave more than one answer to this question

In the study, when the sub-dimensions of the Genital Hygiene Behaviors Scale were compared with the total scale scores according to the faculty or department where students were enrolled, a significant difference was found between the "Menstrual Hygiene Habits" sub-dimension and the total scale score



among students from different faculties or departments (Table 2). (KW: 43.606;  $p < 0.001$ ; KW: 21.353,  $p < 0.01$ ).

**Table 2.** Comparison of the Genital Hygiene Behavior Scale between the departments of the students\*

<b>Genital Hygiene Behavior Scale Sub-Dimensions</b>	<b>KW</b>	<b>p</b>
Genital Hygiene Habits Sub-Dimension	9.373	0.312
Menstrual Hygiene Habits Sub-Dimension	43.606	<0.001
Abnormal Finding Awareness Subdimension	12.164	0.144
Genital Hygiene Behaviors Scale Total Score	21.353	0.006

\* KW – Kruskal-Wallis test

The sub-dimensions of the Genital Hygiene Behaviors Scale were found as follows: the sub-dimension of genital hygiene habits was  $48.05 \pm 5.52$ , the sub-dimension of menstrual hygiene habits was  $31.93 \pm 4.99$ , the sub-dimension of abnormal finding awareness was  $11.29 \pm 2.60$ , and the total score of the Genital Hygiene Behaviors Scale was  $86.73 \pm 10.13$  (Table 3). The sub-dimensions of the Health Literacy Scale were as follows: SOY information access sub-dimension was  $21.77 \pm 3.66$ , SOY information comprehension sub-dimension was  $29.68 \pm 5.28$ , SOY value assessment sub-dimension was  $33.60 \pm 6.44$ , SOY application usage sub-dimension was  $20.96 \pm 4.06$ , and the total score of the Health Literacy Scale was  $106.02 \pm 17.93$  (Table 3).

**Table 3.** Findings regarding the total and sub-dimension mean scores of female students' Genital Hygiene Behaviors\*

<b>Scale and Sub-Dimensions</b>	<b>Min-Max</b>	<b>X<math>\pm</math>SD</b>
<b>Genital Hygiene Behaviors Scale</b>	23–115	86.73 $\pm$ 10.13
Genital Hygiene Habits Sub-Dimension	33–60	48.05 $\pm$ 5.52
Menstrual Hygiene Habits Sub-Dimension	17–40	31.93 $\pm$ 4.99
Abnormal Finding Awareness Subdimension	3–15	11.29 $\pm$ 2.6
<b>Health Literacy Scale</b>	25–125	106.02 $\pm$ 17.93
Access to Information	5–25	21.77 $\pm$ 3.66
Understanding Information	7–35	29.68 $\pm$ 5.28
Appraisal Evaluation	8–40	33.60 $\pm$ 6.44
Using Application	5–25	20.96 $\pm$ 4.06

\* SD – standard deviation, Min – minimum, Max – maximum

Spearman correlations were used to of between Genital Hygiene Behaviors Scale and Health Literacy Scale. There was a significant correlation between the two scales (Table 4). A moderate positive significant relationship exists between the Genital Hygiene Behaviors Scale total scale score and all sub-dimensions of the Health Literacy Scale and the total scale score ( $p < 0.05$ ) (Table 4). There is a moderate positive significant relationship between the Genital Hygiene Habits sub-dimension of the Genital Hygiene Behaviors scale and the "Understanding Information, Appraisal Evaluation, Using Application" sub-dimensions of the Health Literacy scale and the total scale score of the Health Literacy Scale ( $p < 0.05$ ) (Table 4).

**Table 4.** Comparison of Genital Hygiene Behaviors Scale and Health Literacy Scale<sup>a</sup>

	Min.	SD.	1	2	3	4	5	6	7	8	9
1 Genital Hygiene Habits Sub-Dimension	33	5.52	1								
2 Menstrual Hygiene Habits Sub-Dimension	12	4.68	0.395**	1							
3 Abnormal Finding Awareness Subdimension	3	2.6	0.422**	0.457**	1						
4 Genital Hygiene Behaviors Scale Total Score	62	10.12	0.82**	0.794**	0.688**	1					
5 Access to Information	5	3.66	0.389**	0.323**	0.376**	0.460**	1				
6 Understanding Information	7	5.28	0.407**	0.376**	0.365**	0.489**	0.764**	1			
7 Appraisal Evaluation	8	6.44	0.44**	0.359**	0.349**	0.491**	0.784**	0.839**	1		
8 Using Application	5	4.06	0.421**	0.341**	0.390**	0.491**	0.725**	0.742**	0.843**	1	
9 Health Literacy Scale Total Score	25	17.93	0.45**	0.368**	0.393**	0.517**	0.852**	0.915**	0.956**	0.894**	1

<sup>a</sup> Min – minimum, SD – standard deviation, \*\* – correlation is significant at the 0.01 level (2-tailed)

## Discussion

It is crucial for a significant portion of the population, especially young women, to adopt proper genital hygiene practices in order to prevent urogenital infections. The community must have adequate knowledge to embrace these hygiene behaviors, and therefore, genital hygiene practices and health literacy should be examined in conjunction.

When evaluating the sources of health-related information for the participants in this study, it was determined that they primarily accessed such information from the Internet (83.9%), television and radio (25.6%), healthcare professionals (69.5%), books, magazines, and brochures (43.1%), and family members and relatives (43.7%). Literature reports that individuals primarily obtain health-related information from online websites, healthcare professionals, and family/friends, aligning with findings from various studies.<sup>26,38,39</sup> The rapid increase in internet usage and the ease of access to online health-related information have facilitated the availability of a wealth of health information online. However, individuals must possess adequate health literacy levels to interpret the reliability and accuracy of online health information.

The study revealed that most female students participating in the research preferred to use sanitary pads during their menstrual periods. Sanitary pads are considered hygienic and beneficial for menstrual periods due to their single-use nature and absorbent properties. Similarly, the literature reports that participants mostly use sanitary pads during their menstrual periods.<sup>12,32</sup> Considering the ease and accessibility of sanitary pads in Turkey, the majority is believed to prefer them.

Eighty-one percent of the female students participating in the study reported taking showers while standing. Similarly, in the literature, it is reported that most women take showers while standing.<sup>11,18</sup> Because most students stay in state or private dormitories, they can only take showers while standing. Therefore, it is thought that students mostly take showers while standing. Showering while standing may be a preventive factor for vaginal or urethral infection in women compared to showering while sitting.

The total scale score average of female students on the Genital Hygiene Behaviors Scale was determined to be  $86.73 \pm 10.13$ . This result indicates that the genital hygiene behaviors of the female students participating in the study are at a good level. Similarly, in studies conducted in the literature, the total scale score averages for women's genital hygiene behaviors vary between 85 and 95.<sup>6,25,33,40</sup> When looking at the sub-dimensions of the Genital Hygiene Behaviors Scale, an average score of  $48.05 \pm 5.52$  was obtained for the "Genital hygiene habits" sub-dimension,  $31.93 \pm 4.99$  for the "Menstrual hygiene habits" sub-dimension, and  $11.29 \pm 2.6$  for the "Awareness of abnormal findings" sub-dimension. The average scores obtained from the sub-dimensions of the scale also indicate a good level. When compared with previous studies, it can be observed that the participants in this study have a sufficient level of genital hygiene behavior scores. It is thought that the high total scale score and sub-dimension scores may be related to the region where the sample group resides, their level of education, income status, and awareness of health behaviors. The research indicates that students in health-related fields demonstrate higher scores in overall hygiene

behavior, awareness of abnormal findings, and genital hygiene than students in other departments.<sup>7</sup> Additionally, students in health-related fields notably differed in average scores for menstrual hygiene habits compared to students in other faculties. It is believed that the professional courses taken by health students from their first year onwards contribute to their knowledge and awareness of genital hygiene.

Educating women on proper genital hygiene practices and dispelling misconceptions are crucial in preventing urogenital infections. An individual's access to accurate health information and translating it into behavior is closely linked to their level of health literacy.<sup>34,35</sup>

The number of studies on health literacy is increasing, with recommendations to enhance it, as it plays a vital role in improving individuals' quality of life, enabling access to health information during illness, understanding one's health conditions, and adopting appropriate behaviors based on this information.<sup>34,35</sup>

Health literacy is crucial for maintaining and improving health. In this study, the sub-dimensions of the Health Literacy Scale were determined as follows: "Access to health information" sub-dimension scored  $21.77 \pm 3.67$ , "Understanding health information" sub-dimension scored  $29.69 \pm 5.28$ , "Appraisal of health information" sub-dimension scored  $33.6 \pm 6.44$ , "Application of health information" sub-dimension scored  $20.97 \pm 4.07$ , and the total score of the Health Literacy Scale was  $106.03 \pm 17.93$ .

The health literacy levels of female students in this study were found to be satisfactory, with an average score of around 125 on a scale of 25 to 125. This is in contrast to a previous study involving university students, where the average health literacy scores were lower.<sup>15</sup> This study's higher total health literacy score is likely due to their knowledge and experience in health, access to health services, and attitudes toward health.<sup>15,41</sup>

Women with higher health literacy levels demonstrate better genital hygiene practices. A study revealed a positive correlation between health literacy and genital hygiene behaviors, with participants scoring higher on hygiene scales when possessing higher literacy levels.<sup>24</sup> Moreover, a moderate association was found between gynecological cancer awareness and health literacy.<sup>41</sup> As health literacy improves, women prioritize genital hygiene, leading to enhanced practices. This aligns with research suggesting that higher health literacy contributes significantly to improved genital hygiene behaviors among women.

### ***Study limitations***

The study's limitations include its exclusive reliance on data from female students at a single university, with 30% enrolled in health-related fields, and the use of convenience sampling, all of which hinder the generalizability of its findings.

## **Conclusion**

The research has shown a moderately significant and positive relationship between health literacy and genital hygiene behaviors among female university students. In this context, recommendations are proposed for developing a healthy societal consciousness and raising healthy generations. Firstly, various educational activities aimed at enhancing health literacy should be organized. These activities may include courses, lectures, seminars, peer education, and project work. Furthermore, the effective utilization of social media is suggested for awareness and enlightenment campaigns. Social media platforms, widely used by a significant portion of the younger generation, present a potential avenue for increasing health awareness. Professional nurses can address deficiencies by designing specialized education programs encompassing health literacy and proper genital hygiene behaviors. These programs, accessible to girls from the onset of menarche, can facilitate acquiring accurate information and skills early. In conclusion, the findings of this study indicate a positive correlation between increasing levels of health literacy among women and the enhancement of genital hygiene behaviors. Therefore, more comprehensive efforts in health education and awareness campaigns employing innovative methodologies are warranted.

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### ***Author contributions***

Conceptualization, C.S., Z.I., A.D., F.D.B. and E.Ç.G.; Methodology, C.S., F.D.B. and E.Ç.G.; Software, C.S., Z.I., F.D.B. and E.Ç.G.; Validation, C.S., A.D., F.D.B., and E.Ç.G.; Formal Analysis, C.S., Z.I., A.D., F.D.B. and E.Ç.G.; Investigation, C.S., Z.I. and A.D.; Resources, C.S., Z.I., A.D., F.D.B. and E.Ç.G.; Data Curation, C.S., Z.I. and A.D.; Writing – Original Draft Preparation, C.S., Z.I., A.D., F.D.B. and E.Ç.G.; Writing – Review & Editing, C.S., Z.I., A.D., F.D.B. and E.Ç.G.; Visualization, C.S., Z.I. and A.D.; Supervision, F.D.B. and E.Ç.G.; Project Administration, C.S., Z.I., A.D., F.D.B. and E.Ç.G.

### ***Conflicts of interest***

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### **Data availability**

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

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