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1 **Gender differences in attitudes toward death among**  
2 **Chinese university students: *A survey in hunan and***  
3 ***Heilongjiang province***

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## 25 **Abstract**

26 **Background:** A positive attitude toward death has significant implications for college students,  
27 and can help students establish a healthy concept of life. But most colleges and universities in  
28 Mainland China have not yet carried out systematic death education courses.

29 **Objective:** This study aims to explore the attitudes of college age students to determine how they  
30 approach the idea of death using questions that explore five separate dimensions of attitude and  
31 belief.

32 **Methods:** We invited students from seven colleges in Mainland China using invitations sent to  
33 each year's WeChat group. Students participated by scanning a QR code, and were then directed  
34 to a website that contained a self-administered questionnaire. We received 1,206 completed  
35 interviews.

36 **Results:** We found evidence of a substantial gender difference in attitudes toward death. These  
37 differences remain after adjustment for differences between male and female in other correlates of  
38 death attitudes, and are not a function of gender differences in the dimensionality of the five scales  
39 used to characterize attitudes.

40 **Conclusion:** Using previous research on gender differences as a guide, we speculate that these  
41 differences originate in culturally-defined expectations that are gender-related, as well as in  
42 substantial differences in individual family experiences of death. These speculations can take the  
43 form of testable hypotheses that should explain differences within genders as well as between  
44 genders. We believe that better education about death for college students can shape healthier  
45 attitudes among both male and female.

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## 47 Introduction

48 Death is the end of life. No one can avoid it. As natural as our birth, it is an inherent part of  
49 life, a natural episode of human existence [1]. Attitudes toward death vary and depend on the culture,  
50 race and gender roles that shape a person's views of both life and death [2-4]. Death attitudes refer  
51 to people's emotional reactions, evaluations and behavioral tendencies in response to the inevitable  
52 fact of death and ideas about death [5-8]. Initially, the measurement of attitudes toward death was  
53 mainly used as a tool to evaluate the effectiveness of death education, and focused on fear and  
54 anxiety. Subsequently, researchers have expanded this single dimension measurement to multi-  
55 dimensional measurement [9]. The current trend is to study a wide range of responses to death [10-  
56 13]. Wong, Reker and Gesser suggested that [14] research on attitudes toward death often ignores  
57 people's natural and positive reactions. They therefore modified the concept of death attitudes to  
58 measure not only fear and avoidance, but also to include different forms of acceptance.

59 Several cross-cultural studies have found that men and women have different profiles of death  
60 attitudes. Chistopolskaya's study found that [15] regardless of age, females were more likely to  
61 accept death than men. Bassettl's study showed that [16] females scored higher than males in many  
62 fear of death items, and obtained higher scores in different dimensions of acceptance. Wong's study  
63 reported that [14] women are less likely to avoid thinking about death and to express acceptance at  
64 higher levels than men. Power and Smith's study showed that [17] women scored higher than men  
65 only in fearing death of people who mattered to them personally. Long pointed out that [18] cultural  
66 differences, in particular culturally-defined gender roles, may affect people's understanding and  
67 acceptance of death.

68 "Death education" originated in the United States in 1928 and rose in the late 1950s. It has

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69 become very popular in developed countries [19-22]. Unfortunately, it started late in mainland  
70 China, and its popularity is low. Most colleges and universities have not yet carried out systematic  
71 death education courses [23-24]. This is also an important reason for the lack of correct attitude  
72 towards death among Chinese college students.

73 This study investigates the attitudes towards death and factors that influence these attitudes  
74 among students at comprehensive colleges and medical colleges in both northern and southern  
75 provinces (Hunan and Heilongjiang) in China. We document the nature of differences between men  
76 and women in our samples, and suggest a number of reasons for the differences we observed. Such  
77 differences suggest that persistent gender-defined roles in China shape comparisons between men  
78 and women. These factors affecting attitudes towards death and gender differences in attitudes  
79 towards death between male and female identify important issues that should be addressed in the  
80 death education of Chinese college students. This is a subject only recently recognized as a need in  
81 Chinese college curricula.

82

## 83 **Methods**

### 84 **Design**

85 A descriptive cross-sectional study was adopted for this research.

### 86 **Settings and sample**

87 We sampled 1,254 students from seven colleges and universities - including Central South  
88 University, National University of Defense Science and Technology, Hunan Normal University,  
89 Hunan University of Traditional Chinese Medicine, Heilongjiang Qiqihar Medical College, Jiamusi  
90 University and Harbin Normal University - through a combination of cluster sampling and random

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91 sampling. After data cleaning, 1,206 questionnaires remained.

92 In order to identify the cultural differences between Northern and Southern China, we chose  
93 Hunan as it is located in Southern part of China, and Heilongjiang province part of Northern China.  
94 Among the seven universities and colleges, there are two medical colleges, two normal universities  
95 and three comprehensive universities. Among all participants, 536 are from Hunan province, while  
96 670 are from Heilongjiang province. The inclusion criteria were freshman to senior students who  
97 had not yet interned or who were currently interning, and who voluntarily participated in this study.

## 98 **Ethical considerations**

99 The research ethics committee of the Xiang Ya Nursing School of Central South University  
100 approved the study (IRB Approval Number:2018018). The participants were informed that they  
101 were taking part in the study voluntarily and anonymously. They could withdraw at any time and  
102 had the right to ignore questions they did not want to answer. Whatever they chose to do would not  
103 jeopardize their employment conditions.

## 104 **Data collection**

105 The data were collected from April 2018 to June 2018, and 1,206 questionnaire meeting the  
106 inclusion criteria. During the investigation, the response rate to the questionnaire was 96.2%.

107 Data were collected with questionnaire on the network by the researcher. This software comes  
108 from Changsha Questionnaire Star Network Technology Co., Ltd. We invited students from 7  
109 colleges in Mainland China using invitations sent to each year's WeChat group (WeChat, like  
110 Facebook, is a platform communication tool that supports single and multi-person participation  
111 using software that sends voice, pictures, video, text, and links over the Internet). Students  
112 participated by scanning a QR code and were directed to a website that contained a self-administered

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113 questionnaire for completion.

## 114 **Data collection tools**

115 Data were collected with a questionnaire that includes demographic information, with 21  
116 questions related to the students' background and their views on the issue of death, as well as the  
117 Chinese version of the Death Attitude Profile-Revised (DAP-R-C) by Zhu Hailing [25].

118 This revised version is adapted from the Death Attitude Profile-Revised (DAP-R) by Wong,  
119 Reker and Gesser in 1994 [11]. After translating and retranslating the original scale, according to  
120 expert consultation and pre-test feedback results, on the basis of ensuring the equivalence of the  
121 scale, ambiguous items 4, 18 and 22, and repetitive item 20 were deleted, and items 8, 16, 25, and  
122 31, which had similar meanings, were merged to determine the content of the DAP-R-C scale. The  
123 original 32 items were reduced to 25 items. These adapted questions were fewer in number and  
124 easier to complete.

125 The Cronbach's  $\alpha$  of each DAP-R-C subscale was between 0.585~0.853, and the correlation  
126 coefficients between the subscales are smaller than the Cronbach's  $\alpha$  of each subscale. The  
127 Cronbach's  $\alpha$  of the total scale was 0.840. The split-half reliability of each DAP-R-C scale was  
128 between 0.598~0.809. The total scale was divided into two equal parts by odd and even half method,  
129 and the split-half reliability of the total scale was 0.843. In this research, 20 college students  
130 participated in the pilot study and found the questions were understandable and appropriate  
131 according to the research purpose.

132 The scale measures five dimensions of attitudes toward death: Approach acceptance, Escape  
133 acceptance, Fear of death, Death Avoidance, and Neutral acceptance.

134 1. Approach acceptance: Individuals believe there will be a better after-life after death. They

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135 regard death as a channel to happiness. They easily accept the concept of death, and even hope  
136 that death will come sooner rather than later.

137 2. Escape acceptance: Individuals fear life more than death. They regard death as a way to relieve  
138 the pain of life. It is a kind of death acceptance forced by suffering.

139 3. Fear of death: Refers to the individual's fear and negative emotions when facing death.

140 4. Death Avoidance: Individuals try their best to avoid thinking about death or discussing things  
141 related to death, and consider talking about death to be taboo.

142 5. Neutral acceptance: Individuals believe that death is part of the process of life. It is natural and  
143 unavoidable. Those who hold such attitudes do not fear or welcome death. They regard death  
144 only as a natural stage of life.

145 Each subscale has five items, using a Likert 5-point scale scoring method, that is, "strongly  
146 disagree" scoring 1 point; "disagree" scoring 2 points; "neither agree nor disagree" scoring 3 points;  
147 "agree" scoring 4 points; "strongly agree" scoring 5 points.

148

## 149 **Results and findings**

150 Among a total of 1,206 college students, including 388 males and 818 females, the highest  
151 score was found in the dimension of neutral acceptance and the lowest in the dimensions of  
152 approaching acceptance and escape acceptance. Gender is the only characteristic associated with all  
153 five dimensions of death attitude measures in our study. Table 1 shows the average scores for the  
154 full sample and for men and women separately. College students had the highest total scores on the  
155 neutral acceptance dimension. Female students were significantly higher than male students on all  
156 of the neutral acceptance items and with respect to total natural acceptance scores. In comparison,

157 men were significantly higher than women in the dimensions of fear of death, death avoidance,  
 158 approach acceptance and escape acceptance.

159 **Table 1 Average Scores on Five Death Attitude Scales<sup>#</sup> of Chinese College Students**

Death attitude	Totality ( n=1206 )	Female students ( n=818 )	Male students ( n=388 )	t	p
Neutral Acceptance	19.02±3.97	19.39±3.80	18.25±4.21	4.52	0.001**
Approach Acceptance	11.33±4.50	11.04±4.47	11.93±4.51	-3.33	0.001**
Escape Acceptance	12.64±3.85	12.36±3.81	13.24±3.87	-3.74	0.001**
Fear of Death	13.43±4.27	13.18±4.31	13.96±4.15	-2.98	0.003
Death Avoidance	12.57±4.61	12.09±4.59	13.57±4.48	-5.3	0.001**

160 \*\*p<0.001 # DAP-R-C=Chinese version of the Death Attitude Profile-Revised.

161 Table 2 shows the correlations between the five subscales. In general, these correlations are  
 162 larger than the ones observed in the study of Hong Kong students [26], but are nearly always of  
 163 the same sign (direction). In our study, the four subscales that show men's averages higher than  
 164 women's averages have fairly large and significant positive correlations. On the other hand, Neutral  
 165 Acceptance, the only subscale where women's average scores exceed those of men, shows negative  
 166 correlations with all of the other subscales.

167 **Table 2 Correlations Between Students' Responses to the Five Dimensions of DAP-R-C**

Variable	Approach Acceptance	Neutral Acceptance	Escape Acceptance	Death Avoidance	Fear of Death
Approach Acceptance	1.000				
Neutral Acceptance	-.141	1.000			
Escape Acceptance	.627**	-.213	1.000		
Death Avoidance	.372**	-.195	.506**	1.000	
Fear of Death	.316**	-.159	.455**	.681**	1.000

168 \*\*Correlation is significant at the .01 level (two-tailed).

169 In order to determine whether the dimensions characterizing males and females are the same  
 170 or different, we examine the correlations separately for each gender. These are shown in Table 3  
 171 below. The magnitudes and the signs of the correlations are very similar in males and females. This



172 suggests that the dimensions underlying the subscales are actually the same. The major difference  
 173 is where males and females are located on the scales. So the average differences tell an even stronger  
 174 story about gender differences, because males and females can be placed on the same subscales  
 175 rather than in gender-specific dimensions.

176 **Table 3 Correlations Between Each Gender's Responses in Five Dimensions**

Variable	Approach Acceptance	Neutral Acceptance	Escape Acceptance	Death Avoidance	Fear of Death
	Female				
Approach	1.000				
Acceptance	Male				
	1.000				
	Female		Female		
Neutral	-.134**	1.000			
Acceptance	Male		Male		
	-.125*	1.000			
	Female		Female		Female
Escape	.597**	-.239**	1.000		
Acceptance	Male		Male		
	.674**	-.129*	1.000		
	Female		Female		Female
Death	.325**	-.217**	.499**	1.000	
Avoidance	Male		Male		
	.446**	-.105*	.490**	1.000	
	Female		Female		Female
Fear of Death	.286**	-.171**	.439**	.693**	1.000
	Male		Male		
	.364**	-.106*	.471**	.647**	1.000

177 \*Correlation is significant at the .05 level (two-tailed).

178 \*\*Correlation is significant at the .01 level (two-tailed).

179 To investigate why men and women have such a different profile of attitudes about death, we  
 180 examined other factors in the data that distinguish men from women in this sample. Those that show  
 181 significant differences between men and women are presented in Table 4 below.

182 **Table 4 Factors Distinguishing Men and Women in Our Sample of College Students**

Factor	P-value for male versus female	Direction of difference
Single child	P<.000	Female > Male
Academic performance	P<.008	Female > Male
Past or current serious illness	P<.003	Male > Female
Past or current mental illness	P<.006	Male > Female
Family discusses death openly	P<.011	Female > Male
Medical versus non-medical discipline	P<.000	Female > Male
College Year	P<.000	Female > Male

183 \*P<0.05

184 Table 5 shows that the factors distinguishing men and women in our sample do not explain the  
 185 persistent gender differences in attitudes toward death. Gender is a highly significant predictor of  
 186 all death attitudes controlling for all differences between genders listed in Table 5. Year in school,  
 187 a surrogate for age differences in this relatively age-homogeneous sample, mental illness and  
 188 discussions about death in the home are factors that have significant associations with most of the  
 189 five scales. However, gender differences persist when adjusting for these gender-differentiated  
 190 variables. None of the differences we observe in Table 4, even those that appear as significant  
 191 predictors of death attitudes in Table 5, can explain the gender difference.

192 **Table 5: Regression of Death Attitude Factors on Gender and Factors Related to Gender in**  
 193 **Our Sample**

Predictive Factors	Approach Acceptance	Neutral Acceptance	Escape Acceptance	Death Avoidance	Fear of Death
Gender F=1, M=2	0.868***	-0.981****	0.961****	1.357****	0.836***
Single child =1, Not Only=2	-0.497*	0.099	-0.359	-0.176	-0.161
Grade = 1,2, or 3	-0.331**	0.296**	-0.097	-0.361**	-.334**
Had or has serious illness=1; No=2	0.309	0.339	0.005	-0.115	-0.293
Had or has mental illness=1; No=2	-0.962*	0.912**	-1.988****	0.405	0.055
Talk about death in family: 1=yes,	0.134	-0.363*	0.337*	1.095****	0.787****

2=when necessary, 3=never					
Major: Medical=1, Non-Medical=2	-0.175	-.006	0.235	0.211	-0.143
Grade performance: 1=excellent,2=good 3=fair,4=poor	0.065	0.312**	-0.250	-0.285*	0.221
Multiple Correlation Coefficient	.141	.184	.191	.223	.161

194 \*\*\*\*p<.001, \*\*\*p<.01 \*\*p<.05, \*p<.10

195 Table 6 shows that the largest gender differences appear on several items that provoke  
 196 substantial disagreement from both genders. Over these items target avoidance of thinking about  
 197 death, the concept that death ends everything, and the idea that death is an escape from suffering.  
 198 Although both men and women frequently reject these ideas, women show a stronger rejection. The  
 199 average gender differences in subscales reflect these items more than others. While many  
 200 respondents of both genders do not shy away from thoughts of death, women appear more likely to  
 201 allow these thoughts into their consciousness. Furthermore, most women do not their see their own  
 202 death as the end of everything, perhaps because their societal role emphasizes the preparation of a  
 203 generation that will survive them. Nearly two-thirds of women rejected the idea that death is an  
 204 escape from suffering, compared to only half of the men. These results suggest that the gender  
 205 differences we observe are not of a piece. They appear for some kinds of attitudes and disappear for  
 206 others. We see that most women in our sample do not push death out of their thoughts; they “do”  
 207 believe in something beyond death, and are not inclined to see death as a way to avoid suffering.  
 208 Many men also feel this way, but they don’t show the higher level of rejection that we see in women.  
 209

210 **Table 6: Items with the largest and smallest gender differences in response distributions**

<u>Index of gender difference in response distribution:</u>  %disapprove(women)-%disapprove(men) +  %neutral(women)-%neutral(men)	Chi-Squared Test of Independence in 2 by 3 table		Largest Percent Difference		Item Text	Item part of subscale.....
	X <sup>2</sup> , 2df	p-value	Females	Males		
5.1	1.825	.401	Disagree 29.0	25.3	1. Death is no doubt a grim experience	Death Fear
6.5	1.096	.578	Disagree 34.5	31.4	2. The prospect of my own death arouses anxiety in me	Death Fear
7.9	0.642	.725	Agree 31.9	29.6	24. Death is neither good nor bad	Natural Acceptance
9.0	1.233	.540	Disagree 59.3	55.9	13. Death is a union with God and eternal bliss	Approach Acceptance
27.1	24.037	.000	Disagree 45.5	32.3	3. I avoid death thoughts at all cost	Death Avoidance
27.2	15.840	.000	Disagree 57.9	44.3	8. Whenever the thought of death enters my mind, I try to push it away	Death Avoidance
28.1	15.840	.000	Disagree 51.0	39.4	17. The fact of death will mean an end to everything as I die	Death Fear
30.0	21.373	.000	Disagree 62.2	48.2	18. I believe death will help me get away from all the sufferings	Escape Acceptance

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## 212 **Discussion**

213 Many aspects of traditional China that distinguish men and women continue to powerfully  
214 influence gender roles, even though China has entered an unprecedented period of cultural and  
215 social modernization. The rapid improvement in women's social status is important for family  
216 behavior in China. Women no longer live under traditional Chinese patriarchal rules, that is, obeying  
217 their father at home and obeying their husband after marriage [27]. Since the founding of the  
218 People's Republic of China, women's social and economic status has improved significantly, but  
219 women's economic status is still lower than men's. Today, women have increasingly free speech, in  
220 particular since 1950 [28], when China promulgated the Marriage Law, which formally legalized  
221 women's free speech and equalized the rights and interests of wives and husbands [29]. Although  
222 women's social and family status has to some extent improved, men still take on greater social and  
223 family responsibilities, due to the influence of traditional Chinese ideology and culture [30]. In  
224 China, male university students focus on going out into society after graduation, with the need to  
225 achieve in their career and to support a family [31]. Soaring property prices in China will  
226 undoubtedly add considerable burden to their future lives. Below, we consider some of the reasons  
227 we observe gender differences in attitudes toward death, keeping in mind the overall context of  
228 culturally-driven gender roles that persist, even in a society that is modernizing rapidly.

### 229 **Possible explanations for our findings on gender differences**

#### 230 **a. Women's Greater Role in Preparing for the Next Generation and Greater Experience in** 231 **Caring for the Elderly**

232 Women will have many roles in the family after marriage [32]: often taking care of two sets of  
233 aging parents, managing relations between relatives and raising children. Chinese female college

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234 students have typically not yet experienced these things, but when they occur, these changes can  
235 exert a profound effect on their lives. In the process of living their lives and taking on new roles,  
236 women experience birth as they become a mother for the first time, and the continuity of the life  
237 process. At the same time, since women are on the verge of life and death during childbirth, they  
238 also experience the approach of death.

239 A mother's care is an indispensable growth experience for each person from childhood onward. The  
240 renowned education expert Froebel once said: "The fate of the nation is not so much in the hands of  
241 the authorities as in the hands of the mother." This point of view profoundly illustrates the important  
242 role of women in fostering the next generation [33]. From the perspective of the origin of roles,  
243 women naturally acquire the identity of mother from the moment a child is born. This identity is  
244 based on blood relationship and is accompanied by a child's birth. Therefore, the influence of the  
245 mother on the child is the child's earliest influence [34]. Chinese women regard their children as a  
246 continuation of their own lives, which means they have a huge investment in the future beyond their  
247 own lives, so they are not afraid that death will end everything.

248 Due to their traditional role taking care of elderly parents [35], women already have the  
249 experience of preparing for death; they also have psychological endurance. The coexistence of  
250 evidence and reality shows that women tolerate pain more easily and have a greater acceptance of  
251 death than men. Female students in China, especially adults, look forward to experiencing the glory  
252 of motherhood. Mothers love their children and are devoted to their families. Females, therefore,  
253 tend to have more communication with their mothers than with their fathers, and they have the  
254 freedom to speak with their mothers about death. This is influenced by many factors, such as the  
255 mother's management of the family and her caring for the elderly, to them, death is more acceptable.

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256 Females must face the reality that a couple will support four old people and raise one or two children  
257 in the future. This is the result of China's special national conditions. In the past, in order to control  
258 population growth, China adopted an "only child" policy, that is, couples were permitted to have  
259 only one child. In recent years, however, China liberalized that policy, replacing it with a "two-child  
260 policy", that is, after graduation from college couples may now have one child or more. Today,  
261 married couples now need to support two sets of parents and raise at least one child of their own.

262 **b. Men have more stress in their role as family providers and often don't talk about their**  
263 **anxieties and fears**

264 As Chinese boys grow up, their masculine identity continues to develop. Influenced by their  
265 father as a male role model, their focus has always been on how men should shoulder the burdens  
266 of life and bring happiness and security to their family [36]. Men talk about their dreams, their future  
267 and their responsibilities, but seldom discuss life and death with their children. In addition, they  
268 believe that it is too heavy, even unlucky, to talk to a child about death. Even if the child talks about  
269 death, fathers tend to avoid the topic. In a culture where marriage is an expected part of adult life  
270 and with a deepening of economic pressures, it becomes more difficult for men to start and maintain  
271 a marriage. In traditional Chinese culture, men have a sense of superiority [37]. The traditional  
272 Chinese concept of maleness emphasizes that men's work centers around the outside world and that  
273 men must shoulder the responsibility for all outside difficulties [27].

274

## 275 **Conclusion and implications**

### 276 **Implications for death education**

277 Professor Hu of Guangzhou University once said that "Death education is not to beautify death,

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278 but to remove the mystery of death and to illuminate the sacredness of death, so that students cherish  
279 life more, and enhance their psychological health [38]." At the same time, we must formulate  
280 China's death education policy in light of China's special national conditions. Death education  
281 should be compulsory in all university classes in China (including medical schools), to avoid the  
282 fear of death and an escapist attitude among young people. Increasing the availability of  
283 psychological counseling for boys, in particular, can help them avoid the stress of excessive  
284 pressures in life and prevent them from developing an inaccurate view of death. Students should be  
285 encouraged to talk more about life and death, discuss this topic with their parents when appropriate,  
286 and cooperate with and guide their own children to establish a correct concept of death. They should  
287 be encouraged to avoid feeling embarrassed about being an only child unwilling to seek  
288 psychological assistance. As only children, many Chinese had no siblings to share their thoughts  
289 and feelings with, and may be afraid of their parents knowing their secrets. When students are  
290 educated about death, as they grow older, they can understand the meaning of life and death more  
291 profoundly, thus allowing them to cherish their learning environment and opportunities, correct their  
292 learning attitudes, lay a foundation to improve their academic performance, and play a positive role  
293 in preventing the occurrence of suicide and suicide attempts – whether for themselves or for others  
294 - in the future.

## 295 **Topics for further research**

296 Our interpretations lead to research questions that can be investigated in future research  
297 focusing on college students and older adults alike. Here are three, all of which involve direct  
298 measurement of the factors mentioned above for individual men and women.

299 1. Are women who are involved in childrearing less likely to see death as an end to everything



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300 than women with no children?

301 2. Are women who care for elderly parents more likely to think about death and talk openly about

302 death than women who don't act as caretakers?

303 3. Are men who show higher levels of stress about their job and finances more likely to see death

304 as an escape from life than men who are less stressed?

305

## 306 **Acknowledgments**

307 We thank Dr James A. Wiley for data validation and all the study participants.

308

## 309 **Conflict of interest**

310 This study was supported by Masters Level Bioethics Program at Project approval number

311 Central South University in Changsha, China (2017.06-2022.05), Project approval No.

312 R25TW007700. The authors declare they have no conflicts of interest.

313

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