Short Communication

Attitudes, beliefs and knowledge towards Medical Cannabis of Greek undergraduate and postgraduate university nursing students

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A B S T R A C T

Objectives: To assess attitudes, beliefs and knowledge towards medical cannabis (MC) among Greek nursing students by year of study and undergraduate/postgraduate status.
Methods: 294 (229 undergraduate and 65 postgraduate) students participated in this survey. Descriptive and inferential statistics (Pearson's chi-squared, *t*-test) were applied using SPSS.24 ($p \leq 0.05$).
Results: Participant mean age (SD) was 23.1(6.6) years and 80.0 % of the study cohort was female. Senior undergraduate participants (3rd/4th year of study) reported more positive attitudes about MC benefits for mental health treatment compared to junior participants (1st/2nd year) ($p = 0.017$). Junior participants were more inclined to believe there are serious physical health risks associated with cannabis use ($p = 0.038$). Undergraduates, more than postgraduates, expressed a need for MC education and training for academic and practice purposes ($p = 0.015$); and, that there are physical and mental health risks associated with cannabis use ($p = 0.007$). Additionally, undergraduate nursing students were less likely than postgraduates to report knowledge about MC effectiveness for a variety of medical conditions ($p \leq 0.047$); personal cannabis use for recreational purposes ($p < 0.001$); and, medical ($p = 0.018$) or recreational ($p < 0.001$) cannabis use among family members. The vast majority of all nursing students surveyed reported the need for formal education about MC (i.e., theoretical, clinical, laws and regulations) as part of their studies.
Conclusion: Greek nursing student attitudes, beliefs and knowledge about MC vary according to year of study and undergraduate/postgraduate status. From this study, formal education on MC is recommended for Greek nursing students.

1. Introduction

It is well documented by the Greek historian Herodus (5th century B. C.)[1] and the Greek physician, pharmacologist and botanist, Pedanius Dioscorides (in 40–90 C.E.)[1,2] that ancient Greeks cultivated and used cannabis to treat medical conditions such as inflammation, earache, edema, nosebleeds and tapeworms.[1–3]

Cannabis cultivation, commerce and use were illegal in Greece during the 20th century.[4] In 2013, the use of Cannabis Sativa L (Linnaeus) with tetrahydrocannabinol (THC) 0,2%, was legalized for medical purposes by Law 4139.[5] In 2017, Greece became the sixth country of the European Union partnership to produce and market cannabis-related products.[6] Following this action, in 2018, the Greek state passed legislation (i.e., Laws 4523[7] and 2840[8]) which permitted cannabis cultivation for the production, distribution and commerce of Cannabis Sativa L (THC) 0,2 %, and related/derived products.[9] This action involved the Greek National Organization for Medicines; however, the legislation does not identify the medical conditions for which cannabis can be administered, or the healthcare professionals who are entitled to prescribe/administer cannabis for medical purposes. Additionally, there are no official sources of information or training on medical cannabis (MC) in Greece; and, only a few Greek associations on patient rights provide information on this topic via their webpage.[10–12] Distribution, commerce and use of cannabis for recreational purposes continue to remain illegal in the country.

Within this context, MC appears to be an important issue for the

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Greek nursing profession and, especially, students who after graduation are expected to manage MC-related therapies or be employed in substance use therapeutic settings. However, there is a lack of usable information about Greek student attitudes, beliefs and knowledge towards MC. Furthermore, internationally, few studies have investigated the MC issue among nursing students[13,14]; what information is available tends to focus on such professions as medicine[15,16] and pharmacy[17,18] and issues about MC legalization.[14,17] Regarding Greece, specifically, only one study was found that qualitatively explores the attitudes of Greek physicians on the use of MC. This study of only 10 physicians highlighted a lack of robust information and training on MC by government organizations.[19]

The present study aimed to assess the attitudes, beliefs and knowledge of Greek university nursing students towards MC. It was hypothesized that these conditions are associated with year of study and student undergraduate or postgraduate academic status.

2. Methods

2.1. Design, setting and participants

The study setting was the Department of Nursing of the National and Kapodistrian University of Athens (NKUA), Greece. All undergraduate and postgraduate (MSc/PhD) nursing students were eligible to participate. There were no exclusion criteria.

2.2. Sample and data collection

Cluster sampling was performed on 49–66 participants, depending on year of study (4 undergraduate years of study; and, 1st year of study for MSc/PhD candidates). This method ensured better representation of the NKUA nursing students. The sample size was based on power analysis and previous relevant studies.[20] A total of 357 questionnaires were distributed between January and February 2020 during lectures and 296 questionnaires were returned (response rate 82.9 %). Two participants were excluded because their field of study was other than nursing. Finally, 294 respondents were included in the sample.

The "Attitudes, Beliefs and Knowledge towards Medical Cannabis Questionnaire" (MC questionnaire) included 54 items for data collection purposes.[15,20] Sixteen items were used to assess student attitudes and beliefs towards MC; and, twenty items assessed knowledge on MC effectiveness. MC education/training was assessed by 3 items. A section for reporting demographic, educational and personal data was included. The data collection tool used for this survey evidences internal consistency across multiple locations with Cronbach's alpha values ranging from 0.767 to 0.831.[21] The instrument was translated from English to Greek and back translated. Cultural adaptation of the translated version was performed by a group of experts including five academic and clinical instructors.

2.3. Ethics

The study was designed according to the Declaration of Helsinki[22] and the protocol was approved by the Ethics Committee of the NKUA Department of Nursing (Ref. No 315/18-12-2019). Permission was obtained to use the tool for data collection purposes. Each questionnaire was accompanied by a cover letter providing details about the researchers' affiliation, contact information and study purpose. Assurance was provided about the voluntary nature of participation and anonymity of collected data. Also, it was clearly stated that returning a completed questionnaire was considered informed consent to participate in the study.

2.4. Statistical analysis

Internal consistency reliability was assessed for ordinal variables (37

items) via Cronbach's alpha coefficient. The Kuder-Richardson-20 test was used for dichotomous (Yes/No) variables (17 items). Descriptive statistics [mean, standard deviation (SD), frequencies] were calculated. Responses to ordinal variables were grouped to (a) agree/disagree, (b) effective/ineffective, and (c) don't know. Differences between groups were assessed according to year of study for undergraduate students (1st–4th year) and, undergraduate or post graduate academic status. The Pearson Chi-square and Fisher exact tests were used for data analysis purposes and the significance level was set to α = 0.05. The statistical software used for this survey was SPSS version 24.0 (IBM Corp. Armonk NY, 2016)

3. Results

Regarding the MC questionnaire, Cronbach's alpha for internal consistency reliability was α = 0.902, while KR-20 was 0.639. The mean age (SD) of the responders was 23.1(6.6) years and 80.0 % of the study cohort was female. Participants' demographic data and characteristics are presented in Table 1. Senior undergraduates (i.e., 3rd & 4th year of study) reported more positive attitudes towards MC use for mental health conditions compared to 1 st & 2nd year undergraduates (p = 0.017). Junior, 1 st & 2nd year students were more inclined to believe serious physical health risks are associated with cannabis use than senior undergraduates (p = 0.038). Undergraduate participants, compared to postgraduates, were more likely to report: cannabis use has serious mental/physical health risks (p = 0.007); less knowledge and less positive attitudes about MC effectiveness for multiple medical conditions (p ≤ 0.047); and, less personal recreational cannabis use (p < 0.001). A high percentage of undergraduate (99.1 %) and postgraduate participants (92.1 %) reported that they should receive theoretical and clinical

Table 1
Sample characteristics.

Demographic Data	Undergraduate (n = 229)	Postgraduate (n = 65)	Total (n = 294)
Age, mean (SD)	21.42 (5.55) ** *	28.90 (7.72) ** *	23.1 (6.6)
Gender, %(n)			
Female	76.8 (175)	91.9 (57)	80.0 (232)
Male	23.2 (53)	8.1 (5)	20.0 (58)
Marital status %(n)			
Single	58.3 (133)	41.9 (26)	54.8 (159)
Single in relationship	34.2 (78)	38.7 (24)	35.2 (102)
Married/Civil partners	5.7 (13)	17.7 (11)	8.3 (24)
Widow/er	_	_	
Separated	0.9 (2)	1.6 (1)	1.0 (3)
Divorced	0.9 (2)	_	0.7 (2)
Religious preference, % (n)			
Jewish	0.4 (1)	_	0.3 (1)
Muslim	1.3 (3)	_	1.0 (3)
Christian	92.1 (209)	90.3 (56)	91.7 (265)
Other	1.8 (4)	_	1.4 (4)
Non-Denominational	4.4 (10)	9.7 (6)	5.5 (16)
Cannabis Use, % (n)			
Personal-medical	0.4 (1)	_	0.3 (1)
Personal-recreational	10.6 (24) **	33.3 (21) **	15.6 (45)
Family member-medical	7.5 (17) *	17.5 (11) *	9.7 (28)
Family member-recreational	7.6 (17) **	23.8 (15) **	11.2 (32)
Friend(s)-medical	14.7 (33)	19.0 (12)	15.6 (45)
Friend(s)-recreational	40.4 (92)	47.6 (30)	41.9 (122)

Chi-Square test and *t*-test for age.

* p < 0.5.
** p < 0.01.

education/training about MC. Tables 2 and 3 present comparisons based on respondent year of study and academic status.

4. Discussion

This is the first study, to the best to our knowledge, reporting the attitudes, beliefs and knowledge of Greek university nursing students towards MC. Moreover, present findings on the reliability of the Greek version of the MC questionnaire are important for additional research, over time and across locations throughout Greece. Although this tool has been used for similar research in other countries,[15,20] relevant measures have not been reported for Greek nursing students.

Table 2
Medical Cannabis Attitudes, Beliefs and Knowledge among Greek Undergraduate Nursing Students and Year of Study (n = 229).

Attitude statement, % (n)	Year of Study			
	1st (n = 66)	2nd (n = 64)	3rd (n = 50)	4th (n = 49)
I would recommend medical cannabis for patient/client use	70.8 (46)	78.7 (48)	87.8 (43)	85.7 (42)
Physicians should recommend cannabis as a medical therapy	74.2 (49)	78.7 (48)	79.6 (39)	83.7 (41)
There are significant physical health benefits using medical cannabis	70.3 (45)	82 (50)	85.7 (42)	83.7 (41)
There are significant mental health benefits using medical cannabis	54.7 (35)**	69.4 (43)**	81.6 (40)**	73.5 (36)**
Training about medical cannabis should be incorporated into medical/health/social wellbeing related academic curricula	95.5 (63)	87.1 (54)	98 (49)	95.9 (47)
Training about medical cannabis should be incorporated into residency/field practice requirements	93.9 (62)	85.5 (53)	92 (46)	91.8 (45)
Medical/health/social wellbeing related professionals should have formal training about medical cannabis before recommending it to a patient/client	100 (66)	98.4 (60)	96 (48)	98 (48)
Cannabis should be legalized for recreational use	18.2 (12)	23.8 (15)	24.5 (12)	24.5 (12)
Cannabis can be addictive	93.9 (62)	92.1 (58)	93.9 (46)	93.9 (46)
Using cannabis poses serious physical health risks	85.9 (55)***	87.1 (54)	62.5 (30)***	77.6 (38)***
Using cannabis poses serious mental health risks	79.7 (51)**	82.3 (51)**	68.8 (33)**	91.8 (45)**
Medical professionals who prescribe medical cannabis should have ongoing contact with their patients/clients	98.5 (64)	98.4 (60)	100 (50)	100 (49)
Additional research regarding medical cannabis use should be encouraged	96.9 (63)	98.3 (59)	98 (49)	98 (48)
Acceptability of medical cannabis use is in the care of medical conditions, % (n)				
Fibromyalgia	32.3 (20)***	37.5 (24)***	60.0 (30)***	55.1 (27)***
Terminal illness	44.4 (28)***	56.3 (36)***	68.0 (34)***	73.5 (36)***
Medical Cannabis Knowledge, % (n)				
I am prepared to answer patient/client questions about medical cannabis	18.8 (12)	22.2 (14)	18 (9)	16.3 (8)
Students in my professional field should receive formal education about medical cannabis laws and regulations	95.4 (62)**	84.4 (54)**	100.0 (50)**	91.8 (45)**

Chi-Square test.
** p < 0.1.
*** p < 0.01.

Table 3
Greek Nursing Students Attitudes, Beliefs and Knowledge Towards Medical Cannabis: Undergraduate and Postgraduate Comparison (n = 294).

Attitude statement, % (n)	Undergraduate (n = 229)	Postgraduate (n = 65)
I would recommend medical cannabis for patient/client use	79.9 (179)	87.5 (56)
Physicians should recommend cannabis as a medical therapy	78.7 (177)	85.7 (54)
There are significant physical health benefits using medical cannabis	79.8 (178)	87.3 (55)
There are significant mental health benefits using medical cannabis	68.8 (154)	74.6 (47)
Training about medical cannabis should be incorporated into medical/health/social wellbeing related academic curricula	93.8 (213)***	82.8 (53)***
Training about medical cannabis should be incorporated into residency/field practice requirements	90.7 (206)**	81.3 (52)**
Medical/health/social wellbeing related professionals should have formal training about medical cannabis before recommending it to a patient/client	98.2 (222)	96.9 (63)
Cannabis should be legalized for recreational use	22.5 (51)	26.2 (17)
Cannabis can be addictive	93.4 (212)	87.7 (57)
Using cannabis poses serious physical health risks	79.4 (177)***	63.1 (41)***
Using cannabis poses serious mental health risks	80.7 (180)***	60.9 (39)***
Medical professionals who prescribe medical cannabis should have ongoing contact with their patients/clients	99.1 (223)	96.9 (63)
Additional research regarding medical cannabis use should be encouraged	97.8 (219)	96.9 (63)
Acceptability of medical cannabis use for select medical conditions, % (n)		
Alzheimer's disease	26.5 (60)**	40.6 (26)**
Arthritis	44.5 (101)	53.1 (34)
Cachexia	24.4 (55)**	39.1 (25)**
Cancer	40.9 (92)**	57.8 (37)**
Chronic pain	78.4 (178)	82.8 (53)
Eating disorders	20.8 (47)	28.1 (18)
Fibromyalgia	44.9 (101)***	64.1 (41)***
Glaucoma	13.3 (30)***	31.3 (20)***
HIV/AIDS	17.3 (39)	23.4 (15)
Inflammatory bowel disease	31.4 (71)**	46.9 (30)**
Sleep disorders	58.1 (132)**	71.9 (48)**
Mental health conditions	57.5 (130)	67.2 (43)
Multiple sclerosis	34.8 (79)***	70.3 (45)***
Nausea	15.5 (35)***	32.8 (21)***
Parkinson's disease	29.2 (66)***	49.2 (31)***
Persistent muscle spasm	52.2 (118)	58.7 (37)
Seizure/Epilepsy	35.0 (79)***	54.7 (35)***
Terminal illness	59.3 (134)**	76.6 (49)**
Medical Cannabis Knowledge, % (n)		
I am prepared to answer patient/client questions about medical cannabis	19 (43)	21.9 (14)
Students in my professional field should receive formal education about medical cannabis laws and regulations	92.5 (211)	85.9 (55)
Medical Cannabis Education/Training, % (n)		
Have you received any formal education about medical cannabis?		
Yes, in class	5.3 (12)	7.9 (5)
Yes, in clinical practice setting	0.9 (2)	3.2 (2)
Yes, in both the class and clinical practice setting	1.3 (3)	1.6 (1)
No	92.5 (211)	87.3 (55)
Should students in your professional field receive formal education about medical cannabis?	**	**
Yes, in class	26.5 (60)	25.4 (16)
Yes, in clinical practice setting	5.8 (13)	6.3 (4)

Table 3 (*continued*)

Attitude statement, % (n)	Undergraduate (n = 229)	Postgraduate (n = 65)
Yes, in both the class and clinical practice setting	66.8 (151)	60.3 (38)
No	0.9 (2)	7.9 (5)

Chi-Square test.
** p < 0.1.
*** p < 0.01.

Senior undergraduate participants (3rd & 4th year of study) reported more positive attitudes towards MC use for mental health, fibromyalgia and terminal illness treatment purposes than junior undergraduate participants (1st & 2nd year of study). Present study results provide the opportunity to compare studies elsewhere of nursing students.[13,14] Moreover, other data show neutral attitudes towards MC among physicians.[23] Differences between these studies and present Greek findings may be attributed to cultural differences and other factors including the nature and scope of prevailing legislation and regulations.

Present study results evidence junior undergraduate respondents are more inclined to believe serious physical health risks are associated with cannabis use. This finding is consistent with that of Khamenka et al.,[20] Chan et al.[24] and Gritsenko et al.[15] who reported the majority of undergraduate medical students believe cannabis use poses serious physical and mental health risks.

The NKUA Nursing Department offers 3rd year students a 3 h lecture on medical cannabis through an elective course titled "Psychoactive Substances". Consequently, because of the elective nature of the course, few undergraduate students each year receive theoretical education on MC. This may partially explain the present finding that most of the undergraduate participants reported that they should receive formal education on MC laws and regulations. Moreover, undergraduate survey participants were more likely to report a need for MC academic education and clinical practice purposes than postgraduate survey participants. The dearth of MC undergraduate education has been reported in multiple locations.[13,17,18,25]

Undergraduate respondents, compared to postgraduates, tend to be less positive about MC effectiveness for medical conditions. Also, they report less personal cannabis use for recreational purposes. The latter issue (i.e., recreation use) is consistent with the findings of Khamenka et al.[20] among Belarus undergraduate medical students who reported less personal cannabis use. Overall, personal cannabis and other substances use tends to be associated with more positive attitudes towards MC benefits. For example, in the study by Vujcic et al.,[16] on undergraduate medical students in Belgrade, the majority of those students believed MC use is safe and associated with health benefits. This result was found associated with positive attitudes towards cannabis use legalization and personal cannabis and alcohol use.

Current study postgraduate respondents were more likely, than undergraduate students, to report family member(s) medical and/or recreational use. Moreover, most undergraduate respondents agreed that they should receive MC academic and clinical education/training, including information about laws and regulations, during their nursing studies. These results are consistent with findings of other international studies.[15,20,25]

5. Limitations

Since data collection took place in one center only, generalization of the findings to the entire Greek nursing student population is limited. However, the present findings are the first to be published about Greek nursing students; and, as such, provide the opportunity for comparison with other nursing schools in Greece and elsewhere. Such comparisons will promote the possible opportunity for uniform academic curricula development based on mutually agreed on learning and practice related competencies.

6. Conclusion

From this study, it seems that there is an association between the MC attitudes, beliefs and knowledge of Greek nursing students based on year of study and undergraduate/postgraduate status. Integration of formal education about MC in nursing curricula in Greece, as well as further research, on this issue are recommended.

CRediT authorship contribution statement

Margarita Giannakopoulou: Methodology, Validation, Data curation, Formal analysis, Writing - original draft, Project administration. **Fotini Vouzavali:** Validation, Data curation, Software, Writing - original draft. **Dimitra Paikopoulou:** Data curation, Software, Writing - original draft. **Antonia Paschali:** Validation, Writing - original draft. **Meropi D.A. Mpouzika:** Validation, Writing - review & editing. **Maria N.K. Karanikola:** Conceptualization, Methodology, Validation, Writing - review & editing.

Declaration of Competing Interest

The authors report no declarations of interest.

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