CLINICAL SCIENCE

LESSONS FROM A MEDICAL STUDENT-RUN PUBLIC HEALTH JOURNAL CLUB- SURVEY STUDY

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Abstract

The aim of the study was to analyze student participation in a Public Health Journal Club focusing on their attitudes, self-perceived knowledge and skills in public health and research. Additionally, study aimed to determine whether there are differences in attitudes towards the importance of prevention, self-assessed understanding of research methodology, and frequency of reading papers in the groups before and after the Journal Club. We also included an analysis of the project implementation process. Materials and methods: Electronic surveys using Google Forms were designed to gather data from medical students participating in the Public Health Journal Club. Two surveys were created: a pre-assessment survey conducted before the sessions and a post-assessment survey for feedback afterward, providing a comparison of their views over time. Surveys assessed the attitudes, self-perceived knowledge, skills, and experiences of medical students in relation to public health, research, and participation in a Public Health Journal Club. Results: We observed that by participating in the Journal Club, students developed more positive attitudes toward public health and research, as well as improved knowledge and skills in these areas. We discovered that students had a higher self-assessed understanding of research methodology after participating in the Journal Club (p=0.023). Moreover, 81.8% of survey respondents reported that it was easier to interpret articles and 90.9% of respondents reported that they would like to take an elective course similar to our Journal Club. Conclusions: The described Journal Club was perceived as an effective educational activity by the participants and its re-use in different medical areas and specialties should be considered.

КЛИНИЧКИ ИСТРАЖУВАЊА

ЛЕКЦИИ ОД КЛУБ ЗА НАУЧНИ ТРУДОВИ ВО ЈАВНО ЗДРАВСТВО ВОДЕН ОД СТУДЕНТИ ПО МЕДИЦИНА - АНКЕТНА СТУДИЈА

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Печатарски права: ©2025. Карла Крофлин, Карла Лужаиќ, Кристина Крстановиќ, Бруно Кораќ, Сања Мусиќ-Милановиќ. Оваа статија е со отворен пристап дистрибуирана под условите на нелокализирана лиценца, која овозможува неограничена употреба, дистрибуција и репродукција на било кој медиум, доколку се цитираа торигиналниот(ите) автор(и) и изворот.

Конкурентски интереси: Авторот изјавува дека нема конкурентски интереси.

Извадок

Целта на оваа студија беше да се анализира учеството на студентите во Клубот за научни трудови во јавното здравство, со фокус на нивните ставови, самооценето знаење и вештини во областа на јавното здравство и истражувањето. Дополнително, студијата имаше за цел да утврди дали постојат разлики во ставовите кон значењето на превенцијата, самооценетото разбирање на истражувачката методологија и фреквенцијата на читање научни трудови во групите пред и по учеството во Клубот. Исто така, беше вклучена и анализа на процесот на спроведување на проектот. Материјали и методи: За собирање на податоци од студентите по медицина кои учествуваа во Клубот за научни трудови во јавното здравство беа дизајнирани електронски прашалници преку Google Forms. Создадени беа два прашалника: прашалник спроведен пред почетокот на сесиите и прашалник за нивните ставови по завршување, со што се овозможи споредба на нивните ставови со текот на времето. Прашалниците ги оценуваа ставовите, самооценетото знаење, вештините и искуствата на студентите по медицина во однос на јавното здравство, истражувањето и учеството во Клубот. Резултати: Учеството во клубот придонесе студентите да развијат позитивни ставови кон јавното здравство и истражувањето, како и подобрено знаење и вештини во овие области. Откривме дека студентите имаа повисоко самооценето разбирање на истражувачката методологија по учеството во Клубот (p=0,023). Дополнително, 81,8% од испитаниците изјавија дека полесно интерпретираат научни трудови, а 90,9% од нив изразија желба да посетуваат изборен предмет сличен на Клубот. Заклучоци: Клубот за научни трудови беше оценет како ефикасна образовна активност од страна на учесниците, па затоа треба да се разгледа можноста за негова примена во различни медицински области и специјалности.

Introduction

Medical students have a major potential for addressing public health issues and many develop their public health interventions. McLean et al. found that students felt like they had a role in public health advicegiving, but barriers to providing recommendations included their lack of knowledge[1]. Many studies were conducted about students' involvement in interventions during the COVID-19 pandemic, and a total of 91.7% of systematically reviewed articles found that medical students were willing to be involved in pandemic response[2]. Understanding research articles is essential for comprehending public health. Pruskil et al. found that 70% of students agreed that reading papers is challenging[3]. The majority of students agreed that the ability to critically evaluate literature is an important competency for physicians, but only 42.7% reported that their school provided adequate research training[4,5]. Journal clubs introduce critical thinking and participants often self-report increased carefulness in assessing articles[6,7]. During the COVID-19 pandemic, journal clubs were held online, while some valued a flexible approach, some sensed a loss of the social aspect of clubs.[8]

The Public Health Journal Club was developed by the Croatian Medical Students International Committee (CroMSIC) with the aim of motivating colleagues to actively discuss articles, public health challenges, and to join public health interventions. The Journal Club also aimed to help students improve critical thinking skills, public speaking skills, and knowledge of research methodology. The survey study presented here aims to bring new perspectives from the Public Health Journal Club to the wider public. We provide a detailed overview of the organization of our Public Health Journal Club. This survey study aimed to evaluate the involvement of students in a Public Health Journal Club, focusing on their attitudes, self-perceived knowledge, and skills related to public health and research. Additionally, it sought to assess any changes in students' perspectives on the importance of prevention, self-assessed understanding of research methods, and compare some answers before and after their participation in the Journal Club.

Materials and methods

Electronic surveys using Google Forms were designed to gather data from medical students participating in the Public Health Journal Club. Two surveys were created: a pre-assessment survey conducted before the sessions and a post-assessment survey for feedback afterward. The study participants were medical students who are members of CroMSIC. In December 2021, all CroMSIC members were invited to join the Public Health Journal Club, a new project of the Standing Committee on Public Health (SCOPH) in Zagreb, Croatia. All new Journal Club participants were invited to join our study with a link to the pre-assessment survey that was sent via email before each Club session. The post-assessment survey link was sent at the end of all Journal Clubs in June 2022 to everyone who participated. The purpose of the study was explained to the students and their consents were

obtained. Our Journal Club covered ten public health topics in ten one-hour discussions, as shown in Table 1. For each topic, three active participants, who volunteered via the official CroMSIC application, formed a small working group. During the one-month period, each of them read one paper and prepared a 10-minute presentation.

Table 1. Themes and discussion topics of the Public Health Journal Club sessions.

Journal Club topic	Specific themes from selected articles	Topics discussed in an open discussion after the articles were presented
Obesity	• BMI z-score[9] • Telephone survey for data collection, achieving behavior change with graphic imagery[10] • Socioeconomic limitations for health[11]	• Obesity as a cause of preventable death and cancer • California Sugar-Sweetened Beverages Tax Initiative • The vending machine ban in Slovenian schools
Lung cancer and smoking	• Emotionally evocative campaign, media and social marketing use in public health[12] • Medicaid in the USA, tobacco cessation pharmacotherapy, return on investment[13] • Croatian screening for lung cancer, radiation-induced cancers[14]	• Risks of e-cigarettes and their use as a quit-smoking aid • Tobacco Products Directive of the European Parlament • Artificial intelligence (AI) applications in computed tomography scans • Potential AI use for workload reduction in screening
Breast cancer	• Hazard ratio, association of mammography and the reduction of breast cancer mortality [(15)] • Students' involvement in public health[16] • Anastrozole in the reduction of breast cancer risk, randomized controlled trial [17]	• Importance of breast self-examination • Mammography risks and the use of breast ultrasound
Testicular and prostate cancer	• Interventions for testicular self-examination education[18] • Champion's Health Belief Model Scale[19] • Screening and prostate cancer mortality, rate ratio and incidence rate[20]	• National campaigns that promote testicular self-examination • Disadvantages of screening for prostate cancer • Mortality from prostate cancer in EU
Vaccination	• Types of rotavirus vaccines, WHO regions[21] • Test negative case-control design for vaccine effectiveness, odds ratio[22] • Epidemiology of measles, Andrew Wakefield, evidence of the MMR vaccine safety[23]	• The 1972 Yugoslav smallpox outbreak • 5C antecedents of vaccination • Anti-vaccine movements • "Our world in data" • European Center for Disease Control Virtual Academy

Sexually transmitted diseases	• Confounders and biases[24] • Sex education aspects[25] • Progession of therapy and care for HIV patients[26]	• Parent's education and involvement among their childrens' sex education • Ideas for HPV vaccination implementation
Social determinants of health	• Social determinants of obesity and tuberculosis2[7] • Epidemiology of Adverse Childhood Events (ACEs)[28] • Healthy cities, air pollution and health[29]	• Reductionism in clinical medicine • One Health and the Antibiotic Resistance • Local Particulate matter concentrations • Pediatric ACEs and Related Life Events Screener
Colorectal carcinoma	• Impact of AI on miss rate of colorectal neoplasia[30] • Impact of fecal immunochemical test on adenoma detection[31] • Health economic evaluation[32]	• Sigmoidoscopy in prevention of colorectal carcinoma • Colorectal cancer screening program in Croatia
Mental health	• Effects of suicide prevention videos, T-Value[33] • School success and mental health, correlation coefficient[34]	• Focus groups • Werther and Papageno effect • Reasons for not seeking professional help for psychological distress
Non-communicable diseases	• Polypill concept[35] • Impact of different social media apps and medications for lifestyle modifications[36,37]	• Improving health through social media • Adherence to recommendations

Presentations were prepared with the guidance of the local public health officer (LPO) and SCOPH assistants. A 30-minute online practice session was offered to all presenters one week before their scheduled presentations. Students who registered for passive participation received the articles by email one week ahead of the Club meeting. During the discussion, a moderator (LPO or assistant) provided open questions to add interactivity and emphasize learning outcomes. After each discussion, attendance was taken to obtain a total number of participants. Due to COVID-19, the first five sessions were held virtually. The project has been enrolled in the International Federation of Medical Students Associations "Medical Education Systems Program" in 2022.

Data was analyzed in Jamovi (11.3.0) statistical software. Descriptive statistics were used to calculate the frequencies of responses, and the alpha was always set a priori to 0.05. For comparing the groups before and after the Journal Club we used non-parametric tests due to small sample, and violation of both assumption of normality and equal variances. We tested the hypothesis that the Journal Club can increase the perceptions of the importance of prevention and self-assessed understanding of research methodology using Mann-Whitney U test. Due to small expected frequencies, we used the Fisher's test for testing the hypothesis that Journal Club can increase frequency of reading papers.

Results

A total of 87 students joined the Journal Club discussions (72.4% female and 27.6% male). Online discussions were attended by a mean of 28 students, while in-person discussions were attended by a mean of 12 students per meeting.

The pre-assessment survey was filled out by 35 students (response rate: 40.2%), and the post-assessment was filled out by 22 students (response rate: 25.3%). Most of the respondents were second-year (38.6%) and fourth-year students (33.33%). They were interested in clinical medicine specialties (89.47%), and 19.3% of respondents were also interested in public health specialties.

In order to analyze the students' attitudes, self-perceived knowledge and skills in the area of public health and research we presented data from the survey in Table 2 and Table 3. Data revealed that 77.1% of respondents had never attended a journal club and 88.6% thought that activities concerning scientific research should be of greater relevance in schools. The post-assessment revealed that 63.6% of respondents were active participants in the Journal Club and 54.5% of respondents joined four or more Club discussions. All respondents expressed that they would like to be a part of a similar project as this Journal Club in the future. Also, it is highly motivating that 90.9% of respondents would like to take an elective course that is similar to the Public Health Journal Club. 81.8% of respondents stated that they had a greater interest to start or join public health interventions after joining the Journal Club.

Table 2. Results obtained from survey questions that assessed the categories about attitudes towards public health and research.

ATTITUDES RELATED SURVEY QUESTIONS	
PRE-ASSESSMENT	35 total participants
Have you ever joined any Journal club discussion (in Croatia or abroad)?	
Yes **No**	8 (22.9%) 27 (77.1%)
I believe I haven't had enough opportunities to learn about conducting and designing scientific articles during medical school.	
1 - Strongly disagree **2 - Disagree** **3 - Neither agree nor disagree** **4 - Agree** **5 - Strongly agree**	1 (2.9%) 3 (8.6%) 6 (17.1%) 14 (40%) 11 (31.4%)
I think activities concerning scientific research should be of greater relevance in medical schools.	
1 - Strongly disagree **2 - Disagree** **3 - Neither agree nor disagree** **4 - Agree** **5 - Strongly agree**	0 (0%) 0 (0%) 4 (11.4%) 12 (34.3%) 19 (54.3%)
POST-ASSESSMENT	22 total participants

Were you an active participant (presenter) in the CroMSIC Journal Club?	
Yes No I wanted to be, but I couldn't register through the website application form	14 (63.6%) 5 (22.7%) 3 (13.6%)
How many sessions of our Journal Club did you attend?	
One, two, three Four or more	10 (45.5%) 12 (54.5%)
Would you like to join a similar Journal club in the future?	
Yes No	22 (100%) 0 (0%)
I would like to take an elective course in medical school that is similar to the Public Health Journal Club I attended.	
Yes No	20 (90.9%) 2 (9.1%)
After joining the Public Health Journal Club, I have a greater interest to start or join public health interventions.	
1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree 4 - Agree 5 - Strongly agree	0 (0%) 1 (4.5%) 3 (13.6%) 5 (22.7%) 13 (59.1%)

Moreover, 71.4% of respondents have never written a scientific paper, and after Journal Club all respondents claimed that their critical thinking skills were sharpened. Also, 72.7% of participants believe that their knowledge of prevention and interventions expanded a lot more than before the Club. A total of 54.5% of participants claimed that they had learned enough about different research study designs during the Journal Club. Furthermore, 81.8% of respondents reported it was easier to read and interpret scientific papers than before and all active participants noted that presenting in the Journal Club improved their public speaking skills.

Table 3. Results obtained from survey questions that assessed the categories about self-perceived knowledge and skills in the area of public health and research

SELF-ASSESSED KNOWLEDGE AND SKILLS RELATED SURVEY QUESTIONS	
PRE-ASSESSMENT	35 total participants
Are you experienced in writing scientific papers (review articles, original research articles, or case reports)?	
Yes No	10 (28.6%) 25 (71.4%)
POST-ASSESSMENT	22 total participants
I think I expanded my knowledge about prevention and interventions in the Public Health Journal Club.	
It did not expand It expanded a little It expanded a lot	0 (0%) 6 (27.3%) 16 (72.7%)

I think I sharpened my critical thinking skills in Journal Club discussions.	
My skills did not sharpen	0 (0%)
My skills sharpened a little	10 (45.5%)
My skills sharpened a lot	12 (54.5%)
I think that I learned enough about different research study designs during the Journal Club	
1 - Strongly disagree	0 (0%)
2 - Disagree	0 (0%)
3 - Neither agree nor disagree	5 (22.7%)
4 - Agree	12 (54.5%)
5 - Strongly agree	5 (22.7%)
After participating in the Journal Club I find it easier to read and interpret scientific papers than before.	
1 - Strongly disagree	0 (0%)
2 - Disagree	0 (0%)
3 - Neither agree nor disagree	4 (18.2%)
4 - Agree	4 (18.2%)
5 - Strongly agree	14 (63.6%)
Presenting in the Journal Club improved my public speaking skills.	
1 - Strongly disagree	0 (0%)
2 - Disagree	0 (0%)
3 - Neither agree nor disagree	0 (0%)
4 - Agree	5 (38.5%)
5 - Strongly agree	8 (61.5%)

In order to review the project implementation process, we presented all the data in Table 4. 77.3% of the students attended the Journal Club discussions both online and in-person. A high percentage of participants, 86.4%, strongly agreed that they were easily communicating opinions because we were all colleagues in Journal Club discussions.

Table 4. Results obtained from survey questions that assessed the categories about the Public Health Journal Club project implementation process.

PROJECT IMPLEMENTATION RELATED SURVEY QUESTIONS	
PRE-ASSESSMENT	22 total participants
In which format were you attending the Journal Club discussions?	
Just online	1 (4.5%)
Just in-person	4 (18.2%)
Both online and in-person	17 (77.3%)
If you were joining both online and in-person, what was more beneficial for you?	
Online	1 (5.6%)
In-person	14 (77.8%)
Both were the same	3 (16.7%)
If you have answered yes to the previous question (see Table 2), in which year would you suggest students take such an elective course?	

First	1 (5%)
Second	4 (20%)
Third	4 (20%)
Fourth	5 (25%)
Fifth	6 (30%)
I believe we were easily expressing our opinions because we were all colleagues in Journal Club discussions (only students joined).	
1 - Strongly disagree	0 (0%)
2 - Disagree	0 (0%)
3 - Neither agree nor disagree	1 (4.5%)
4 - Agree	2 (9.1%)
5 - Strongly agree	19 (86.4%)
I think that professors should be present during the Journal Club.	
1 - Strongly disagree	4 (18.2%)
2 - Disagree	12 (54.5%)
3 - Neither agree nor disagree	3 (13.6%)
4 - Agree	3 (13.6%)
5 - Strongly agree	0 (0%)
Did the Journal Club fulfill your expectations?	
Yes	16 (72.7%)
No	0 (0%)
I didn't have any expectations	6 (27.3%)

Observing the values before and after participating in Journal Club in Table 5, no statistically significant difference was observed in the perception of the importance of prevention among the respondents (p=0.269; Mann-Whitney U test). The understanding of research methodology showed statistically significant differences between the two surveys (p=0.023; Mann-Whitney U test). Analysis showed that the frequency of reading scientific papers by respondents before and after participating in the Club was changed. There was a noticeable increase in the share of respondents who started reading scientific papers weekly after participation (from 11.4% to 31.8%) and a significant drop (from 17.1% to 9.1%) in the share of those who never read papers or did so several times a year (p=0.166; Fisher's test).

Table 5. Differences in attitudes towards the importance of prevention and differences in self-assessed understanding of research methodology in the groups before and after the Journal Club.

Survey question	Group	Number of the respondents	Mean	Median	SD	SE
Prevention is very important to me	Pre-assessment	35	4.94	5.00	0.23	0.03
	Pre-assessment	22	5.00	5.00	0.00	0.00
I understand scientific methodology well	Pre-assessment	35	3.37	3.00	1.00	0.16
	Pre-assessment	22	3.95	4.00	0.78	0.16

Discussion

Our Journal Club introduced an innovative method for bringing public health topics closer to medical students. We observed that by participating in the Journal Club, medical students developed more positive attitudes toward public health and research topics, as well as improved knowledge and skills in these areas. We discovered a statistically significant difference between the pre- and post-intervention groups, with the post-intervention group having a higher self-assessed understanding of research methodology. A higher frequency of reading papers and a more positive perception of the importance of prevention were not statistically significant. This was most likely due to the fact that nearly half of those who completed the post-evaluation joined the Journal Club three times or less. Our research showed that students can organize quality educational content for one another. Similarly, authors from Saudi Arabia found out that journal club participants with varying academic levels enhanced collaborative communication and assisted in clarifying and explaining concepts[38]. Furthermore, one of the advantages of joining the Club was the opportunity to meet new colleagues during the pandemic that impacted networking events. Journal Club discussions were a place where colleagues exchanged ideas and collaborated with each other. Due to the preventative measures for COVID-19, half of the Journal Club sessions were held in the online format and half in person. More students participated in online sessions. This could be attributed to inconvenient traveling that was required and scheduling conflicts. Lizer et al. concluded that a journal club effectively motivates critical reading and helps teach epidemiology and biostatistics to physicians in training[39]. Consequently, we tried to follow these findings and a great number of our participants were content with our methodology and statistics explanations.

There were some limitations to our study. For instance, we were unable to match the respondent's results from the pre- and the post-assessment survey. We compared two respondents' groups without knowing if they filled out both surveys. A sample size was one of the reasons for using non-parametric tests which resulted in less statistical power. Lastly, our study results were based on self-perceived assessments and in the future more follow-up studies could be conducted.

Conclusions

Strong health systems require more public health informed professionals, so public health knowledge should be provided to medical students in the most practical way possible. Most students will become clinicians and each clinician is an important health advocate. Understanding the importance of advocacy and health policies can be crucial for influencing decision-makers and delivering better healthcare. The described Public Health Journal Club was perceived as an effective educational activity by the participants and its re-use in different medical areas and specialties should be considered.

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