
ORIGINAL ARTICLE

Evaluating a service-learning assignment in a doctor of chiropractic program public health course

Krista L. Ward, DC, MPH, Donna H. Odierna, DrPH, MS, and Monica Smith, DC, PhD

Objective: Despite the use of service learning in other health care education programs, little is published about its use in doctor of chiropractic programs. Since 2017, the public health course at our institution has included a service-learning assignment in which students volunteer for nonprofit organizations and write an essay about their experience. The objective of this study was to assess the effects of the assignment on students' self-reported public health knowledge and attitudes.

Methods: Between April 2017 and June 2018, 56 essays were collected from students who volunteered at a nonprofit organization focused on 3 categories: youth, the environment, or poverty. Each essay was deidentified and assigned random 4-digit-number file names. Ten files were randomly selected from each of the 3 categories for qualitative thematic analysis using deductive and inductive coding.

Results: Student essays demonstrated competency in public health concepts, including organizational systems, levels of prevention, and the social ecological model. In addition, a majority of the students went beyond discussing knowledge gained from this assignment and described the impact of their experience on their personal growth.

Conclusion: This study demonstrates that students respond favorably to a service-learning assignment that addresses public health competencies and may foster personal and professional development.

Key Indexing Terms: Education; Public Health Professional; Chiropractic; Social Welfare; Learning

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INTRODUCTION

Service learning is used in many educational institutions for health care professions,¹ including medical,^{2,3} nursing,¹ and dental⁴ schools. Reported benefits include providing students opportunities for applying classroom learning to real-world settings, increased understanding of community needs and resources, and relationship building.³ In addition, one study found an association between volunteering and medical school academic performance.⁵ Hennen,⁶ as cited by Guidry et al,³ argued that it is necessary to teach medical students social obligation defined as the responsibility “to direct . . . activities towards addressing the priority health concerns of the community, region and/or nation they have a mandate to serve.” Little has been published, however, about service learning in doctor of chiropractic programs (DCPs), with the exception of a small study on student outcomes after international mission trips.⁷

Since spring 2017, the introductory public health course at our institution has included a service-learning assignment in which students are given a choice to volunteer for

a nonprofit, attend a political event, or work on a project related to health in their community (Appendix A is available online accompanying this paper at www.journalchiroed.com). As part of this assignment, students are asked to write a short essay reflecting on their experience and how it relates to public health. The service-learning activity and essay replaced a midterm in the course. This assignment could potentially meet several of the public health competencies outlined for DCPs at the 2018 annual meeting of the American Public Health Association (APHA), including “Demonstrate a basic understanding of the public health systems that exist on local, national, and global levels, especially with regard to organizations, workforce, and financing” and “Identify public engagement strategies that may be used to improve the health of communities and contribute to the reduction of health disparities, recognizing community assets and resources.”⁸ The purpose of this study is to formally evaluate the student essays and identify how this assignment changes students' public health knowledge and attitudes.

METHODS

Between April 2017 and June 2018, 56 out of 218 public health students in 5 consecutive cohorts volunteered at 1 of 3 different nonprofit categories for their public health assignment: category I, food/clothing bank; category II, a youth-based organization; or category III, an environmental-focused organization. After their volunteer work, students wrote an essay and uploaded these into our college's electronic learning management system, Canvas (Instructure, Inc, Salt Lake City, UT). For this study, the course instructor/principal investigator downloaded and deidentified each essay by removing names and any other identifying information from the file. Random 4-digit numbers were used for file names, and no links were recorded between these file names and the essay authors. Student identity was further protected by editing or paraphrasing some quotes to reduce the likelihood of deductive disclosure, which is identification of an individual's identity through details or characteristics.⁹ Ethical approval for this study was granted by the institutional review board of Life Chiropractic College West, Hayward, CA.

Ten consecutive files from each category were chosen for inclusion in this study based on their randomly assigned file names. For the youth category, several students volunteered at the same nonprofit, and 2 of the initially selected essays were replaced with essays representing other nonprofits.

The principal investigator (KLW) drafted a codebook using deductive and inductive approaches. First, themes and codes were deducted based on what emerged from the initial reading of the essays and after reviewing the literature on similar service-learning assignments in other health care disciplines,^{2,3} most notably the 2004 study by Rubin et al.⁴ Then, an inductive approach was taken by revising and adding codes based on what emerged from testing the codebook on 4 essays and discussing these between the 3 investigators (KLW, DHO, MS). After the codebook was finalized, 2 investigators (KLW and DHO) independently coded a sample of 6 essays (2 from each category I–III) to test for rater agreement. When we calculated our thematic agreement, we used the 6 independently coded essays, calculated the number of themes that we agreed upon per essay, and then averaged the 6 scores. After testing for agreement, KJW coded 20 additional essays. Any questionable codes were discussed with DHO until both reviewers reached consensus. Similar to a study by Zohouri et al,¹⁰ we chose the essay as the unit of analysis.¹⁰

RESULTS

We identified 5 recurring themes. Students included in their essays the reasons why they selected the particular nonprofit for their assignment (theme 1); how they felt about the experience (theme 2); what they learned from the experience (theme 3); how they were impacted by the experience (theme 4); and who benefited as a result of their work (theme 5). The number of essays identifying each of these themes is in Table 1. KLW and DHO independently

Table 1 - Themes and Frequency Found in 30 Essays

Theme	No. of Essays (%)
1. Selection criteria for the nonprofit organization chosen	20 (67)
2. Feelings about the assignment	20 (67)
3. Knowledge from assignment	25 (83)
4. Impact of assignment	21 (70)
5. Beneficiaries from assignment	29 (97)

coded 6 (20%) of the 30 essays and achieved 87% thematic concordance.

While many of the essays contained several interesting quotes, no more than 1 representative quote from any individual essay was included in this paper so that a wide range of student voices could be heard. Following are some quotes from each of the 5 themes.

In themes 1 and 2, students shared why they picked a particular nonprofit for their service-learning assignment and whether it was a positive experience. For example, 1 student wrote, "I do not understand how people visit the beach for enjoyment yet can trash it. This is unhealthy for both humans and the environment. For this reason, I decided to help in a beach cleanup." Another shared, "Overall, it was a great experience[,] and I would definitely recommend [this] food bank to anyone who wants to volunteer."

The following quotes highlight theme 3 (knowledge from the assignment) and demonstrate how students integrated their service-learning experiences with the public health classroom lectures and assigned readings on the subjects of social determinants, levels of prevention, and the social ecological model:¹¹

"This volunteering opportunity relates to public health because homelessness and unemployment [are] an issue in the United States, and with these comes the issue of food insecurity, or even just nutritious food insecurity."

"I believe [this work] would count as tertiary prevention. They provide a service to people as a solution to 1 of the symptoms of the problem[;] it eases people suffering by giving them food security while they face the real problem of poverty."

"The food bank is a way of addressing health from an intrapersonal level and as a public policy because it is a government-funded foundation that is providing [food to] families of incredibly low economic status, low education, and low health literacy."

Additionally, students shared knowledge about organizational strengths, weaknesses, and resources addressing public health.

Table 2 - Impact of the Assignment (Theme 4)

Code and Number of Essays that Included the Code (#)	Description	Example Quotes:
Service (7)	Student describes desire to return to this or other types of community service.	"I will definitely be volunteering for [this organization] again in the future; they are truly doing great things to better this community."
Empathy (8)	Student describes empathy, compassion, or cultural competency.	". . . [I]nvolving myself in this or any other future community events allows me to understand their needs better and potentially figure out a way to provide them affordable care or inspire further change to coverage laws to improve their care plans."
Professional Development (5)	Student describes opportunity to practice communication or social skills, including relationship building.	"This event helped me step out of my own comfort box and engage with many different people. . . . It helped me build my social skills and my confidence in talking to new people."
Gratitude (9)	Student expresses humility or gratitude related to the experience.	"They were so grateful for what we had for them, and it reminded me never to take for granted the things that I am blessed to have every day."
Change (17)	Reflection either describes a transformation as a result of the experience or includes a prequalifying statement indicating the knowledge is new.	"I really appreciated this assignment, and I felt I learned a lot from it." "I learned a lot from this experience, mostly about myself." "I have a new perspective on how I can help my community as a chiropractor."

"According to [this organization] they will serve more than 2,000,000 pounds of food, [and] 75% of that food is provided free or donated by their community partners. This is a great organization that knows how to get the whole community involved to help the public in need."

"I think [the city] can help a lot more homeless people by opening up more shelters[,] and by doing so it would in turn help the public by cleaning the streets of [the city to] prevent the homeless population from contracting different types of diseases that could easily be prevented if more shelters would open up and care for the homeless."

"Our route passed a park, an elementary school[,] and a community college and we were informed that since the city does not have a school bus system in that area most kids walk to school along that road. Almost immediately we found needles and syringes along the side of the road."

For theme 4, we have organized the example student quotes in Table 2 to demonstrate how we identified quotations for specific codes under this theme. We followed the same process for all themes.

Along with the 5 students who expressed developing professional skills during the experience (Table 2), 2

students specifically indicated that the experience created a bridge between their learning institution and the surrounding community.

"I received tons of questions about how to manage neuropathy, aches, and pains[,] however, I steered clear of blatant chiropractic answers. . . . Instead I helped them think of ways to manage their concerns on a daily basis by telling them to stay active, eat low inflammatory foods, and to keep track of what triggers their symptoms to flare. Our conversation led to them asking me not only [to] come back when I was free, but also to come back to do a health talk for the whole residence."

"The amazing thing about cleaning up our city was that the community was able to see that we care about the community that we all live in together."

Lastly, essays included theme 5 if the students described the benefit the community received from their service:

"It had never occurred to me that they would remember who I was or that I would have that much of an impact on their lives at all, but seeing the smiles on their faces when we ran into each other that night was priceless."

DISCUSSION

The majority of students reflected a change in their knowledge or attitudes because of this assignment. Students' public health knowledge reflected in these essays addresses the public health competencies involving basic understanding of public health systems and identifying strategies that may improve community health.⁸ In addition, students met other competencies by defining levels of prevention and explaining determinants of health, including social determinants. Some students gained skills and made connections with the community to help bridge chiropractic and public health; this addresses an additional competency of describing the complementary roles between these 2 professions.⁸ Of note, a majority of the students (70%) went beyond discussing knowledge gained from this assignment and described the impact of their experience on their personal growth.

One strength of this study is the collection of data across 5 quarters of the public health class. The pooling of cohorts allows for greater generalizability of the study; however, we did not collect demographic information. Another strength of the study was having an independent rater code 20% of the essays with 87% thematic concordance.

There are 3 main sources of bias that may have entered this study: sampling bias, observation bias, and expectation bias. The study may have introduced sampling bias by using essays from students who self-selected service learning. The 25% of students who choose to do service learning for their midterm project may be more likely to report positive experiences than if this had been a mandated assignment. Additionally, we only had time to code half of the essays submitted, although these were randomly selected to reduce bias. Observation bias may have entered the study by the use of essays that were submitted for grades. While the instructor told students to write freely and not just what they thought would please the grader, students might have described their experiences in a more positive way than they would have otherwise. Finally, expectation bias may have been introduced by having the instructor of the class and developer of the assignment as the principal investigator.

CONCLUSION

The majority of students reflected that this assignment was a positive experience that led to new knowledge or life perceptions and benefited community members. Excerpts from student reflections indicate that this assignment could meet several of the public health competencies outlined for DCPs at the 2018 APHA annual meeting. Prior to implementing a similar assignment, faculty are advised to carefully plan pre- and postcompetency evaluations to address the potential biases identified in this study.

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About the Authors

Krista Ward is a research specialist and adjunct faculty member in the Research Department at Life Chiropractic College West (25001 Industrial Blvd, Hayward, CA 94545; kward@lifewest.edu). Donna Odierna is a research specialist in the Research Department at Life Chiropractic College West and adjunct assistant professor at Samuel Merritt University, School of Nursing (25001 Industrial Blvd, Hayward, CA 94545; dodierna@lifewest.edu). Monica Smith is the director of the Research Department at Life Chiropractic College West (25001 Industrial Blvd, Hayward, CA 94545; msmith@lifewest.edu). Address correspondence to Krista Ward, 25001 Industrial Blvd, Hayward, CA 94545; kward@lifewest.edu. This article was received September 27, 2019, revised October 17, 2019, December 4, 2019, May 4, 2020, and accepted May 17, 2020.

Author Contributions

Concept development: KLW, MS. Design: KLW, DHO, MS. Supervision: KLW. Data collection/processing: KLW. Analysis/interpretation: KLW, DHO, MS. Literature search: KLW, MS. Writing: KLW, DHO. Critical review: KLW, DHO, MS.

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