RESEARCH ARTICLE

Prostate cancer awareness at Brigham Young University of Idaho: A cross-sectional study [version 1; peer review: 1 approved with reservations, 1 not approved]

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Abstract

Background: Prostate cancer is the second leading cause of cancer death in American men, and is very common in older men. Early screenings have been proven to help diagnose prostate cancer sooner. Ignorance about prostate cancer can be a huge problem impeding men from getting screened. Hence, it is important to be aware of the disease and encourage prostate cancer screening by age 50. The purpose of this study was to establish the level of awareness of prostate cancer among college students at Brigham Young University of Idaho (BYU-I).

Methods: This survey research was conducted at BYU-I. Questionnaires were sent via email. Responses were received the same way and analyzed using SPSS.

Results: The study shows that knowledge about prostate cancer varied greatly among BYU-I students. The level of awareness is poor and is not correlated to gender or age.

Conclusion: This study shows a significant lack of awareness of prostate cancer among BYU-I students. Necessary steps should be taken to promote more awareness and early screening for prostate cancer in this setting. Educational opportunities should be offered for recognition of symptoms and to promote screening which will lead to early diagnosis and treatment.

Keywords

prostate cancer, awareness, university students

Open Peer Review

Approval Status

	1	2
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1. Noor N.P. Buchholz , Sobeh's Vascular and Medical Center (SVMC), Dubai, United Arab Emirates Marco Raber , Emirates Hospital, Dubai, United Arab Emirates		
2. Nelson Bennett , Northwestern Memorial Hospital, Chicago, USA		
Any reports and responses or comments on the article can be found at the end of the article.		

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Author roles: **Mukendi AM:** Conceptualization, Data Curation, Investigation, Methodology, Resources, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; **Jenks D:** Data Curation, Investigation, Methodology, Resources, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; **Moore H:** Data Curation, Investigation, Methodology, Resources, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; **Ackerman V:** Data Curation, Investigation, Methodology, Resources, Validation, Writing – Original Draft Preparation, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

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Introduction

Prostate cancer screening continues to be a huge controversial topic in our society mostly because of the benefit of diagnosing it versus the risk of overtreating it¹. Prostate cancer is not the deadliest type of cancer, but it is very common in older men. Early screenings have been proven to help diagnose prostate cancer sooner¹. Ignorance about prostate cancer can be a huge problem impeding men from getting screened. According to The American Cancer Society, each year more than 30,000 men die of this condition¹, making it the second deadliest cancer for American men. However, the American Cancer Society also stated that an early diagnosis yields a five-year survival rate of almost 100%. Hence, it is important to be aware of the disease and encourage prostate cancer screening by age 50¹.

This study was performed in order to establish the level of awareness of prostate cancer among college students at Brigham Young University of Idaho (BYU-I).

Methods

Study setting

Our study focused on students attending BYU-I and was conducted in February 2016 over a period of nine days. The study received approval from the Brigham Young University Institutional Review Board for Human Subjects (IRB) under reference W16-175.

The majority of students attending BYU-I have backgrounds from all over the country and most students are under the age of 30 with a few outliers. There were 17,562 students enrolled at BYU-I with 9,278 of those students being women and 8,284 men².

Participants and data collection

For our study, we used Google Forms to create a 7-question survey and used BYU-Idaho Student Research to disperse it to BYU-Idaho students' emails. If a participant completed and sent the questionnaire back then that was considered to be consent for participation in the study.

We initially had 12 questions and decided to only use 5 of these, besides age and gender, to make the survey as short and purposeful as possible. There was no exclusion criteria to participate in the survey. Each participant received an email accompanying the survey explaining the purpose of this research and clearly stated that participation was voluntary and that the data would be confidential and anonymous (Supplementary File 1). To avoid any bias, efforts were made to have questions clear and understandable, well-structured, logical and short. Two questions

used a scale and the rest required a Yes/No/I don't know answer. After a little over one week of compiling we received 55 responses.

Data collected by the survey was age, gender and answers to the following questions: Have you heard of prostate cancer?; Do you know or have you heard of someone suffering from prostate cancer? How familiar are you with prostate cancer?; Is one of the following symptoms of prostate cancer? (Pain, Trouble urinating, Blood in urine); Is one of the following treatments for prostate cancer? (Surgery, Radiation Therapy, Anti Hormonal therapy).

Data analysis

We used SPSS for data analysis. We analyzed the data to measure prostate cancer awareness in BYU-Idaho students. Using the data, we used statistics to see how familiar BYU-Idaho students are with prostate cancer. We performed a Pearson correlation coefficient test with the level of significance of 0.001 to see if there was a correlation between gender and prostate cancer awareness. We created bar graphs displaying these statistical analyses. We performed the same test to see if there was a correlation between age and prostate cancer awareness.

Results

In total, 17,562 students were eligible to participate in the survey. Only 55 responses were received, of which 7 had missing data and were not included in the analysis. The final data included 48 participants aged from 18 to 59 (years). 31 participants were women and 17 were men. Our sample matched the age of the BYU-I student population with a mean age of 25.5 years old, and a median of 22 years old. The study shows that knowledge about prostate cancer varied greatly among BYU-I students. Although this data represented the student body at BYU-I well, there was no correlation between age and familiarity with prostate cancer (Table 1).

We also tested to see whether or not gender and familiarity with prostate cancer would yield a correlation (Table 2). The 0.100 in Table 2 shows the correlation is very weak. Women reported to have more familiarity with prostate cancer than men. The woman who ranked her familiarity with prostate cancer the highest used an 8 on a scale of 1 to 10. The most common answers were 2, 3, and 4. These numbers are very low compared to the amount of prostate cancer that occurs in the population. It was interesting to see that although prostate cancer affects men, in our study fewer men had heard of prostate cancer than women (Figure 1).

Table 1. Association between age and familiarity of prostate cancer in students from Brigham Young University Idaho (n=48).

		How old are you?	How familiar are you with prostate cancer?
How old are you?	Pearson Correlation	1	0.050
	Sig. (2-tailed)		0.734
How familiar are you with prostate cancer?	Pearson Correlation	0.050	1
	Sig. (2-tailed)	0.734	

Table 2. Association between gender and familiarity of prostate cancer in students from Brigham Young University Idaho (n=48).

		How familiar are you with prostate cancer?	What is your gender?
How familiar are you with prostate cancer?	Pearson Correlation	1	0.100
	Sig. (2-tailed)		0.497
What is your gender?	Pearson Correlation	0.100	1
	Sig. (2-tailed)	0.497

Figure 1. Awareness of prostate cancer and gender among Brigham Young University of Idaho students. Green, women; blue, men.**Dataset 1. Survey data on prostate cancer awareness at Brigham Young University of Idaho**

<https://dx.doi.org/10.5256/f1000research.16566.d222459>

The key to this data is included in [Supplementary File 1](#).

Discussion

Prostate cancer is a significant public health issue in the United States. The American Cancer Society estimates that in 2011, about 240,890 men were diagnosed with prostate cancer and 33,720 men died from it³.

Research is battling against the rising issue of prostate cancer. Attempts to increase awareness have yielded successful results. Prostate Cancer Awareness Week is held every third week of September by the Prostate Cancer Education Council,

which offers a great opportunity to the community in the US to learn more about prostate cancer and to encourage early detection and diagnosis of the disease⁴. Prostate cancer awareness has been one of the top priorities in order to cure or treat prostate cancer effectively⁵. The *Journal of Cancer Education* has stated that young adults' knowledge of cancer is not a greatly researched area⁵. This disease has claimed many lives so far. The aim of this study was to highlight the level of awareness in the population of students at BYU-I, with the hope to increase knowledge of how devastating the disease is and how manageable it is with the proper treatment.

The present survey showed clear evidence of the lack of prostate cancer awareness among college students at BYU-I. Assuming that most college campuses are similar to BYU-I, the results are most likely representative of prostate cancer awareness in other undergraduate college campuses; however, due to the lack

of a substantial number of responses, this data needs further investigation to be representational of under-graduate college campuses throughout the United States. Varying results will occur depending on the size of the university, environment, and whether or not the university is for post-graduates. College majors and student backgrounds may have a huge effect on college students' awareness of prostate cancer. The awareness of this disease is not high among college aged students attending BYU-I; therefore, necessary steps should be taken to promote more awareness and early screening for prostate cancer in this setting.

Limitations

The survey only captured 55 responses out of about 18000 students, so we do not know the experiences of the majority of the student body. Time constraint were a huge factor as this was a university assignment with deadline for submission.

Supplementary material

Supplementary File 1: Questionnaire and key for dataset.

[Click here to access the data](#)

Conclusion

This study shows a significant lack of awareness of prostate cancer among Brigham Young University- Idaho students. Necessary steps should be taken to promote more awareness and early screening for prostate cancer. Educational opportunities should be offered for recognition of symptoms and to promote early diagnosis for a potential curative management.

Data availability

F1000Research: Dataset 1. Survey data on prostate cancer awareness at Brigham Young University of Idaho. , [10.5256/f1000research.16566.d222459](https://doi.org/10.5256/f1000research.16566.d222459).

Grant information

The author(s) declared that no grants were involved in supporting this work.

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Reviewer Report 16 November 2018

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Nelson Bennett

Department of Urology, Northwestern Memorial Hospital, Chicago, IL, USA

Thank you for the opportunity to review this manuscript. All comments and suggestions are meant to enhance the quality of this manuscript and future research by your group.

It is apparent that a significant amount of time has been spent by the authors in the conception, data collection and authoring of this manuscript.

Introduction:

1. The introduction should include background information and set up the purpose of the study. While prostate cancer is important to know about as adults, it is not something that college-aged people know much about. This is because the only physicians that this age group has seen are most likely pediatricians. I do not have a clear understanding of what this study is attempting to accomplish.

Methods/Results:

1. Survey projects are tricky and rife with pitfalls. The most glaring issue is the very poor response rate. The results are based on a response rate of 0.3%. It is very difficult to accept the results as valid unless the response rate is >30%.
2. The other issue with survey projects has to do with the questions asked. If the right questions are not asked in the right way, the results will be invalid. Additionally, if the questionnaire is not formally validated, then the results tend to change even if applied to the same group. This manuscript unfortunately suffers from these issues.

Discussion:

1. In the first paragraph of the discussion, the author is supposed to summarize the results. In the next 2-3 paragraphs, the author is charged with picking 1-2 important findings from the study and providing further commentary with comparisons to existing literature.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 16 Nov 2018

Alain Mwamba Mukendi, Brigham Young University, Rexburg, USA

Thank you so much for taking time to review this article. We will address your concerns to improve the quality of the article.

Competing Interests: None

Reviewer Report 05 November 2018

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Noor N.P. Buchholz

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Marco Raber

Emirates Hospital, Dubai, United Arab Emirates

INTRODUCTION:

The introduction gives a generally confusing background that doesn't focus on the object of the study.

The statement "Prostate cancer is not the deadliest type of cancer" is incorrect. Prostate cancer is in fact the most common cancer in men and the second leading cause of death after lung cancer.

I would state pragmatically:

- Prostate cancer is the most common
- Early diagnosis lead toeven if the screening trials have shown conflicting results.....overtreatment.....
- However, the prostate cancer awareness is another important.....it might allow to optimize an opportunistic screening.....
- The prostate cancer awareness has been spread in the last years bymonth awareness.....
- However the effective level of awareness in the population is difficult to assess.....

- This study was performed in order to establish the level of awareness of prostate cancer among college students at Brigham Young University of Idaho (BYU-I).

METHODS:

In the methods section we usually specify only the methods we use to reach the results, how we select the population study, the variables, characteristics and statistical method. We don't speak about numbers which have to be mentioned in the results section:

- "After a little over one week of compiling we received 55 responses".
- "We initially had 12 questions and decided to only use 5 of these, besides age and gender, to make the survey as short and purposeful as possible."
- "To avoid any bias, efforts were made to have questions clear and understandable, well-structured, logical and sh..."

The above statements are discussion statements; they are not suitable to be put in the M&M section.

The questionnaire includes 5 empiric questions:

- Have you heard of prostate cancer?
- Do you know or have you heard of someone suffering from prostate cancer?
- How familiar are you with prostate cancer?
- Is one of the following symptoms of prostate cancer? (Pain, Trouble urinating, Blood in urine).
- Is one of the following treatments for prostate cancer? (Surgery, Radiation Therapy, Anti Hormonal therapy).

No one of these regard screening and early detection, which is the most important target of cancer awareness. Questions 1, 2 and 3 have the same meaning. In particular, question 3 doesn't allow a 'yes/no/I don't know' answer. Question 4 is completely useless because early stage curable prostate cancer is not symptomatic. Question 5 has to be addressed to healthcare professionals.

RESULTS:

I cannot discuss the results but a statistical analysis is very hard in the people who gave feedback. The sample is very limited.

The variables have to be described as mean, range, SD.

DISCUSSION:

The authors do a dissertation about prostate cancer awareness. I instead would have discussed the results of this study:

- Low number of feedbacks.
- Methodology chosen to reach the people has to be discussed because it led to very poor

results.

- The statement “It was interesting to see that although prostate cancer affects men, in our study fewer men had heard of prostate cancer than women” has to be discussed.
- “The present survey showed clear evidence of the lack of prostate cancer awareness among college students at BYU-I”. It is not a clear evidence because these results could be due to an insufficient methodology...

CONCLUSIONS:

The conclusions are not supported.

In my opinion this article is not suitable for indexing.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Urology

We confirm that we have read this submission and believe that we have an appropriate level of expertise to state that we do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 05 Nov 2018

Alain Mwamba Mukendi, Brigham Young University, Rexburg, USA

Thank you so much for a thorough review of this research note. I really appreciate your inputs. I will consider every single point you raised to improve the quality of this paper that I did not want to waste as a simple assignment. Would you be able to review the next version?

Competing Interests: NONE

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