

# Attitudes Toward Testicular Cancer and Self-Examination Among Northern Irish Males

American Journal of Men's Health  
2017, Vol. 11(2) 253–261  
© The Author(s) 2016  
Reprints and permissions:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/1557988316668131  
journals.sagepub.com/home/jmh



Rachel Kathryn Roy, MSc<sup>1</sup> and Karen Casson, PhD<sup>2</sup>

## Abstract

Testicular cancer incidence rates are increasing worldwide making it the most common malignancy in males aged 15 to 45 years. Without a known way to prevent the disease health professionals must promote awareness and early detection. A literature review identified a scarcity of information regarding awareness and knowledge of, and attitudes toward, testicular cancer and testicular self-examination among men in Northern Ireland. This study aimed to establish baseline data for Northern Ireland using a convenience sample of 150 men, aged 18 to 45 years. The sample was recruited from across the country and so represents a range of education and area deprivation levels. An online survey was used to collect data. Results showed that while 39% of respondents correctly identified the age group at highest risk for testicular cancer, only 17% of respondents had ever heard of a testicular self-examination. Analysis revealed knowledge, awareness, and attitudes differed by age groups and area deprivation quintiles. It is recommended that health promoters in Northern Ireland and elsewhere use these findings to tailor health promotion initiatives to engage men and raise testicular cancer and self-examination awareness.

## Keywords

testicular cancer, testicular self-exam, health promotion and disease prevention, men's health programs

Received June 13, 2016; revised August 11, 2016; accepted August 15, 2016

## Introduction

The concept of health is complex and not easily defined in concrete terms. Individuals will measure health according to their own social and cultural norms (Corcoran, 2007) and while individual lifestyle choices and genetics affect health status, it can be argued that socioeconomic, cultural, and environmental conditions have a greater level of influence on health (World Health Organization [WHO], 2016b). Health promotion seeks to enable and empower individuals and their communities to make informed decisions about health with emphasis on these wider determinants.

The WHO suggests that all health policy consider the specific needs of both men and women as each gender has a unique set of biological and social needs relating to health (WHO, 2016a). Within gender-specific health promotion the focus is typically on women's health issues, however, the subject of men's health is one requiring significant attention (Richardson & Carroll, 2009). It is recognized internationally that men are reluctant to seek medical help (Richardson & Carroll, 2009), often delaying until symptoms become debilitating (Cronholm, Mao, Nguyen, & Paris, 2009). This behavior may be due to

traditional masculine gender socialization and social norms that encourage men to put their health at risk (De Visser, Smith, & McDonnell, 2009), the stigma of weakness attributed to men who seek help (O'Brien, Hunt, & Hart, 2005; Vogel, Heimerdinger-Edwards, Hammer, & Hubbard, 2011), or a lack of awareness and knowledge about the risks and warning signs of male-specific diseases, such as testicular cancer. The cause of testicular cancer is as yet unknown, although several risk factors have been associated with the disease including undescended testicles, family history, age, and ethnicity (Garner, Turner, Ghadirian, & Krewski, 2005; Michos, Xue, & Michels, 2007; National Health Service, 2014; Pettersson, Richiardi, Nordenskjold, Kaijser, & Akre, 2007; Richiardi, Pettersson, & Akre, 2007). Without a known way to prevent the disease health professionals

<sup>1</sup>School of Nursing, University of Ulster, Northern Ireland

<sup>2</sup>Institute of Nursing and Health Research, University of Ulster, Northern Ireland

## Corresponding Author:

Rachel Kathryn Roy, 152 Stoneglen Way, Mount Hope, Ontario L0R 1W0, Canada.

Email: rachel\_curry\_7@hotmail.com



must encourage awareness and early detection to reduce the risk of metastasis. Testicular cancer is the most common malignancy in males aged 25 to 49 years in the United Kingdom (Cancer Research UK [CRUK], 2011) and approximately half of the annual diagnoses in Northern Ireland between 2009 and 2013 were in men younger than 34 years (Northern Ireland Cancer Registry, 2013b). If testicular cancer is detected early (Stage I, cancer only in the testes), the survival rate in the United Kingdom between 2006 and 2010 was 100%. Survival rates were significantly lower for men diagnosed in Stages III or IV of the disease (CRUK, 2011). If left untreated long enough to spread throughout the body (Stages III and IV), it can be fatal (CRUK, 2011). Incidence rates in Northern Ireland and worldwide are higher among White men (CRUK, 2011). Although the incidence of testicular cancer is low throughout the world, it is estimated to have doubled in the past 40 years (National Cancer Institute, 2016). The European Age-Standardized Rate of incidence in Northern Ireland had an annual change of +1.24% from 1993 to 2011 (Northern Ireland Cancer Registry, 2013a).

The international literature demonstrates that many men are unaware of their risk for testicular cancer, the signs and symptoms of the disease, or how to perform a self-examination as a tool for early detection (Cronholm et al., 2009; Handy & Sankar, 2008; Ward, Vander Weg, Read, Sell, & Beech, 2005). Even men with greater knowledge of testicular cancer, from families that had two or more confirmed cases, or a single family member with bilateral testicular cancer, still had suboptimal self-examination practices (Vadaparampil et al., 2009), indicating that knowledge alone is not enough to encourage regular self-exam. Self-efficacy to perform a testicular self-examination has been identified as crucial to the intention to perform self-exams (McClenahan, Shevlin, Adamson, Bennett, & O'Neill, 2007; Umeh & Chadwick, 2010). In addition, masculinity norms have been linked to attitudes, awareness, and knowledge levels (Singleton, 2008) as well as to overall health help-seeking behaviors in men (Mahalik, Levi-Minzi, & Walker, 2007). The evidence indicates that more needs to be done to inform men about testicular cancer risk and to empower them to value their testicular health. With a scarcity of research specific to Northern Ireland available, the aim of this study was to use a cross-sectional design to obtain baseline levels of awareness, knowledge, and attitudes regarding testicular cancer and self-examination among men across Northern Ireland.

## Methodology

### Design

Previous studies on awareness of testicular cancer have generally used either qualitative or quantitative

approaches but ideally a mixed method would be used to gain comprehensive data. For this study, the gender of the researcher (female) was deemed a possible barrier to performing focus groups or interviews with men on the topic of testicular cancer. Thus, a cross-sectional design with a self-administered online questionnaire was employed to collect data. An online questionnaire was chosen over postal questionnaires and telephone surveys as the convenience and anonymity of online questionnaires can increase response rates (Kaplowitz, Hadlock, & Levine, 2004). This was judged especially important given the established difficulty in engaging men to participate in health research (Richardson & Carroll, 2009).

### Location and Sample

A pilot study was conducted with a convenience sample of men ( $n = 10$ ) to test the understandability of the questionnaire content and check the functioning of the link to the online survey. The pilot participants received the link to the online survey via e-mail. Feedback from these men was positive and no changes were deemed necessary. An invitation to participate in this research was issued via mail to all men aged 18 to 45 years who had registered at Health Checks with Action Cancer ( $n = 200$ ), a charity organization in Northern Ireland. The posted invitation included information on how to access the online survey. A link to the survey was placed on the Action Cancer website and sent via the e-mail system at the University of Ulster, Jordanstown, Northern Ireland ( $n = 780$ ). Thus, a diverse group of men in terms of age, education, and area deprivation was sampled from across Northern Ireland. For analysis, age was categorized as 18 to 25 years, 26 to 35 years, or 36 to 45 years. The 2010 Northern Ireland Multiple Deprivation Measure (Northern Ireland Statistics and Research Agency, 2010), the chosen deprivation measure for Government, was used to attach deprivation levels to postcodes. The deprivation rankings for the 890 Super Output Areas (SOAs) were categorized into quintiles with 20% of SOAs in each quintile. Quintile 1 represents the least deprived SOAs (affluent) and Quintile 5 represents the most deprived SOAs.

### The Research Instrument

Data were collected using an online questionnaire consisting of 20 questions. The questionnaire was generated using SurveyMonkey.com, a secure source for online survey research (SurveyMonkey.com, 2011). There was no one instrument available that measured knowledge, awareness, and attitudes toward testicular cancer and self-examination so a novel tool was developed. The instrument was adapted from several validated tools measuring testicular cancer and self-examination knowledge, awareness, and attitudes used in previous research studies

(Cronholm et al., 2009; Daley, 2007; Rew, McDougall, Riesch, & Parker, 2005; Vadapampil et al., 2009; Ward et al., 2005). The reliability of the instrument was tested through a test–retest pilot study with a sample group of the target audience. Cronbach's alpha was calculated to measure internal reliability for knowledge, awareness, and attitudes survey items ( $\alpha = 0.86$ ;  $\alpha = 0.80$ ;  $\alpha = 0.78$ , respectively). Construct validity was assessed through review and feedback from two experts, one in health promotion and one in quantitative survey design. Pilot responses were also compared with previously published study results that used the validated tools mentioned above to assess criterion validity. The instrument was deemed both valid and reliable after these measures were completed.

### **Ethics**

Ethical considerations included the provision of information on the purpose and objectives of the study, web links to cancer support services listed at the end of the survey along with a hyperlink to more information on testicular cancer. A recommendation to discuss testicular health concerns with a health professional was offered. Men were informed on the opening page of the survey that postcode (zip code) information was being gathered to see if geographical area affected knowledge of testicular cancer and self-examination. Consent was implied through the completion of the survey. Ethical approval for this research was granted by the School of Nursing Research Governance Filter Committee at the University of Ulster in Belfast.

### **Analysis**

The Kruskal–Wallis nonparametric statistical test was used to compare differences between age groups and deprivation quintiles. Further analysis using Mann–Whitney *U* tests with Bonferroni corrections was also undertaken when looking at multiple comparisons. As only a small number of respondents had a close relative with testicular cancer (2%,  $n = 3$ ), sensitivity analysis was undertaken and revealed that these cases did not affect the overall results. The level of statistical significance was set at  $p \leq .05$  for all tests.

## **Results**

### **Respondents**

Approximately 1,000 men were reached through the various recruitment methods giving a response rate of 15% (150/1,000). Respondents were spread relatively evenly across age groups with a slightly higher proportion (40%,  $n = 60$ ) being in the 26 to 35 age group. Figure 1 provides

the breakdown of respondents across the deprivation quintiles. The majority of respondents (40%,  $n = 60$ ) had accessed the survey through the University e-mail system which may explain why a greater proportion (33%,  $n = 50$ ) of participants was from the least deprived areas (Quintiles 1 and 2). None of the men sampled had had testicular cancer themselves and only 2% ( $n = 3$ ) of the respondents had a close relative with the disease.

### **Knowledge and Awareness**

Thirty-nine percent of respondents ( $n = 58$ ) correctly identified the age group at highest risk for testicular cancer as men aged 15 to 45 years, however, only 11% ( $n = 16$ ) considered themselves at risk for the disease even though all the respondents fell into this high-risk age group. While all respondents identified at least one of the most common signs/symptoms and risk factors for testicular cancer, none correctly identified them all (Figures 2 and 3). Only 21% of respondents ( $n = 31$ ) identified ethnicity as a risk factor, although it is commonly linked to testicular cancer with Caucasian men at greater risk. Many men incorrectly believed lifestyle factors, such as weight (49%,  $n = 73$ ) and high alcohol consumption (21%,  $n = 31$ ) were linked to testicular health. Of the men surveyed, 55% ( $n = 82$ ) knew that the purpose of a testicular self-examination is detection and not prevention or treatment. Only 24% ( $n = 36$ ) knew that men over the age of puberty should be performing them. Of concern is that 44% ( $n = 66$ ) of respondents viewed self-exams as being either not important or only somewhat important and that 25 men (17%) had never heard of testicular self-exam at all. Although over one third of respondents (35%,  $n = 52$ ) knew that testicular self-exams should be performed monthly only 10% ( $n = 15$ ) were actually performing them that often. Twenty-one percent of respondents ( $n = 31$ ) felt more than somewhat confident in their ability to perform a testicular self-exam properly. When asked whether they would feel comfortable speaking to a health care professional about their testicular health, 44% ( $n = 66$ ) responded “If I have to I will.” The majority of respondents (87%,  $n = 130$ ) had never contacted a health provider to discuss their testicular health. Interestingly, of the few men who had a close relative with the disease (2%,  $n = 3$ ), only one had contacted a health professional regarding testicular health and none correctly identified all signs/symptoms or risk factors.

### **Age Groups**

Kruskal–Wallis analysis revealed that awareness of testicular self-examination differed by age group ( $p = .006$ , degrees of freedom [ $df$ ] = 2). Mann–Whitney *U* analysis with a Bonferroni correction revealed that men older than 25 years were more likely to have heard of self-exams.

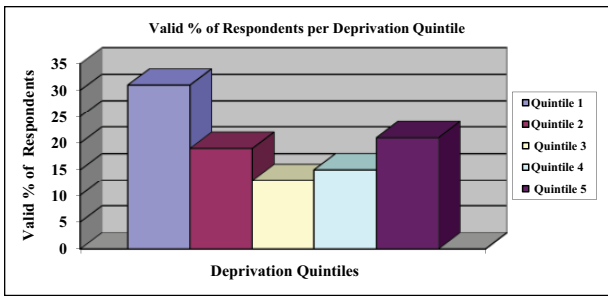


Figure 1. Valid % of respondents per deprivation quintile.

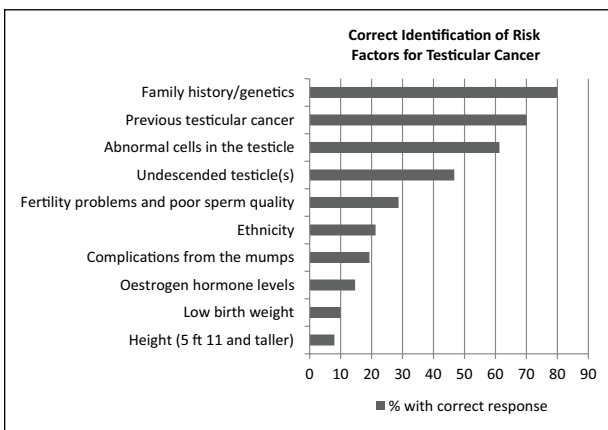


Figure 2. Correct identification of risk factors for testicular cancer by percentage.

Men older than 35 years ranked self-exams as more important than younger men ( $p = .034$ ,  $df = 2$ ). Men older than the age of 25 years felt more confident in their ability to perform a self-exam ( $p = .007$ ,  $df = 2$ ) and performed them more regularly ( $p < .0001$ ,  $df = 2$ ). There was a marginal statistically significant difference between age groups as to whether they had contacted a health professional to discuss testicular health, with men older than 35 years having done so more often ( $p = .068$ ,  $df = 2$ ). Knowledge of the correct signs/symptoms or risk factors did not differ significantly by age group.

### Deprivation Quintiles

Overall, area deprivation was not linked to statistically significant differences in knowledge of risk factors or signs/symptoms. However, men from deprivation Quintiles 1 and 2 (least deprived) were statistically more likely to consider themselves at risk for testicular cancer ( $p = .005$ ,  $df = 4$ ). It should be noted that the overall proportion of respondents who answered “yes” to considering themselves at risk for testicular was only 11% ( $n = 16$ ) with most responding that they were unsure (43%,  $n = 64$ ) or did not consider themselves at risk (47%,  $n = 70$ ).

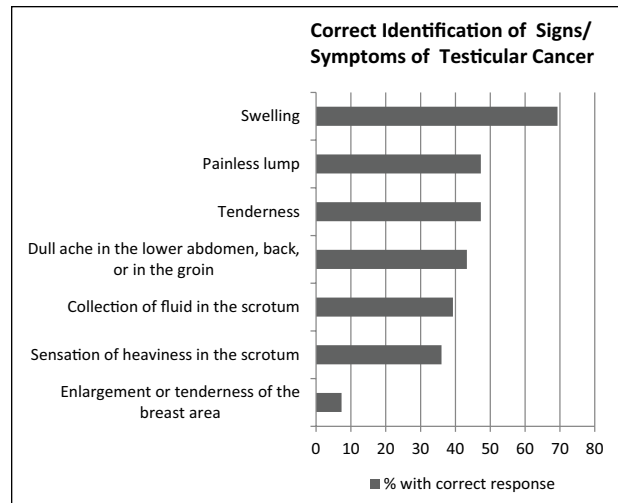


Figure 3. Correct identification of signs/symptoms of testicular cancer by percentage.

### Self-Examination Instruction

Men who had been shown how to perform a self-examination by a health professional (13%,  $n = 19$ ) were more likely to rank self-exams as important ( $p = .009$ ,  $df = 1$ ), had a greater level of confidence to perform self-exams ( $p < .0001$ ,  $df = 1$ ), and were more likely to perform regular self-exams ( $p < .0001$ ,  $df = 1$ ) than men who had not received instruction. They were also more likely to feel comfortable discussing a testicular abnormality with a doctor ( $p < .0001$ ,  $df = 1$ ), had discussed their testicular health in the past with a health professional ( $p < .0001$ ,  $df = 1$ ), and were significantly more aware of their risk of testicular cancer ( $p = .020$ ,  $df = 1$ ). Analysis revealed greater knowledge of the age group at highest risk ( $p = .064$ ,  $df = 1$ ) and of who should perform testicular self-exams ( $p < .0001$ ,  $df = 1$ ) among those men who had been shown how to perform a self-exam by a health professional (13%,  $n = 19$ ).

### Self-Efficacy

Men with greater self-efficacy toward testicular self-exams were statistically more likely to perform monthly exams ( $p < .0001$ ,  $df = 4$ ) and feel comfortable discussing testicular abnormalities with a health professional ( $p < .0001$ ,  $df = 1$ ). Men with greater confidence performing self-exams were more likely to know who should be performing self-exams ( $p = .016$ ,  $df = 1$ ).

### Discussion

The results of this study indicate that men aged 18 to 45 years from across Northern Ireland generally lack awareness and knowledge about testicular cancer

signs/symptoms and risk factors and about performing testicular self-examinations. This aligns with international research findings that demonstrate men worldwide tend to have some basic knowledge about testicular cancer itself but lack knowledge about testicular self-examination (Cronholm et al., 2009; Umeh & Chadwick, 2010; Ward et al., 2005). This lack of specific knowledge regarding testicular cancer is highlighted by these results wherein respondents incorrectly identified lifestyle factors such as drinking (21%,  $n = 31$ ) and weight (44%,  $n = 66$ ) as risk factors for testicular cancer. Of the few men surveyed, who had a close relative diagnosed with testicular cancer, only one had contacted a doctor regarding his own testicular health. Similarly, Vadaparampil et al. (2009) conducted cross-sectional research ( $n = 99$ ) with men from families with multiple cases of testicular cancer or with one family member with bilateral testicular cancer and reported that even these high-risk men had suboptimal self-examination practices. These similar findings indicate that increased awareness of testicular cancer does not necessarily lead to increased self-examination practices.

The current finding of differences between age groups regarding the perceived importance of testicular self-exams, with older men considering it more important, is consistent with earlier research. Wardle et al. (1994) identified a positive correlation between increasing age and testicular self-examination performance. McCullagh, Lewis, and Warlow (2005) conducted quasi-experimental research with men in the United Kingdom and reported that at baseline the percentage of men 18 years or younger that were practicing testicular self-exams on a monthly basis ranged between 6% and 36%. The results presented herein identify that younger men did not consider testicular self-examination as important as older men. Lower rates of testicular self-examination in younger men has previously been linked to young men's belief that cancer only affects older age groups and therefore they do not need to be performing them (Lechner, Oenema, & de Noojier, 2002). The current results indicate that men in Northern Ireland are aware of the risk age group but do not consider themselves at risk despite this. This lack of risk acknowledgment is likely contributing to low rates of self-exams.

Respondents with greater knowledge of testicular cancer were more likely to demonstrate an intention to perform self-exams. This association has been noted in previous, cross-sectional research conducted in the United Kingdom by Brewer, Roy, and Watters (2010) with men aged 18 to 64 years ( $n = 188$ ) that reported that men with greater knowledge of testicular cancer were more likely to practice monthly self-exams. Building on this is the finding herein that respondents who had been shown how to properly perform a self-exam by a health

professional were more likely to perform regular exams. Cross-sectional research conducted with 203 adolescent males reported that students who had never heard of testicular self-examination were more likely to report intention to delay health care seeking with symptoms of testicular cancer (odds ratio, 2.83; 95% confidence interval [1.33, 6.05];  $p = .007$ ; Cronholm et al., 2009). The survey results identify that men who had been shown how to perform a self-exam by a health professional were more likely to feel comfortable discussing a testicular abnormality with a health professional ( $p < .0001$ ,  $df = 1$ ). Level of confidence in one's ability to perform a self-exam also increased comfort level toward seeking help from a health professional regarding testicular health and an increased likelihood to perform monthly exams. This is consistent with previous data linking self-efficacy to the intention to perform testicular self-examination identified by multiple studies (Lechner et al., 2002; McClenahan et al., 2007; Umeh & Chadwick, 2010). These collective findings indicate the importance of increased knowledge of, and self-efficacy toward, testicular self-examination in regard to intention to seek help for testicular abnormalities and intention to perform self-exams.

The analysis of differences between deprivation quintiles in Northern Ireland was unique to this research. The finding that men from areas of higher deprivation are less likely to consider themselves at risk for testicular cancer but that area deprivation did not affect any other factors associated with testicular cancer or self-examination knowledge, awareness, or attitudes is an unusual finding and should be explored further in future research. Overall the findings presented here, while specific to Northern Ireland, are supported by previous international research on awareness, knowledge, and attitudes toward testicular cancer and self-exam.

### *Strengths and Limitations*

This study collected data from men across a range of socioeconomic areas throughout Northern Ireland and not from a strictly university-based sample pool as in previous research (McClenahan et al., 2007; McGilligan, McClenahan, & Adamson, 2009). It explored differences between age groups as well as deprivation quintiles in Northern Ireland, an aspect not previously investigated. Most important, it created a baseline data set specific to Northern Ireland to be utilized in the future to shape effectively targeted testicular health promotion initiatives. However, this small exploratory study had limitations which should be acknowledged. The low response rate of 15% gives a margin of error of 7.5% which is slightly higher than the normally acceptable level of 5%. This lower response rate was likely due to the previously

mentioned difficulty experienced in engaging men to take part in this research. The researchers were limited in that incentives for completion of the survey, a strategy reported to encourage greater online survey response rates (Millar & Dillman, 2011), could not be offered. The study was a cross-sectional design using a convenience sample of Northern Irish males thus causal relationships cannot be determined and results are best suited for hypothesis generation in future research to develop the findings further. It is recommended that future studies use a mixed-method approach to generate a more comprehensive data set.

As in any survey research, self-report data may potentially be biased in terms of social expectations and telescoping. However, the anonymity of an online survey may have countered this potential source of bias. An empirical analysis of online research concluded that "the data provided by Internet methods are of at least as good quality as those provided through traditional paper and pencil measures" (Gosling, Vazire, Srivastava, & John, 2004, p. 102). Additionally, if testicular self-examination behavior was overestimated this would mean the need for health promotion initiatives has been underestimated. Previous testicular cancer research that utilized self-reporting would have been similarly affected in terms of comparisons. Although future research needs to address the limitations of this study, the findings have generated a unique baseline data set specific to Northern Ireland on which researchers can build on.

### *Theoretical Framework*

It is good practice for all health promotion initiatives to use theoretical paradigms as a guide for design (National Cancer Institute, 2005). Theories can help "identify potential factors or leverage points that may influence decisions that can help in targeting and structuring of communication" (Corcoran, 2007, p. 41). Health promotion adopts theoretical models from many disciplines and "no single theory dominates health promotion practice" (Nutbeam & Harris, 2004, p. 7). When targeting men to raise awareness and knowledge of testicular cancer and promote proper testicular self-examination practice the health belief model (HBM) is most fitting. The HBM was conceptualized with the initial intention of explaining why individuals are willing to participate in public health screening programs but its principles are still relevantly applicable to the men's health today (Berry, 2007; Nutbeam & Harris, 2004). The model suggests that the likelihood of an individual taking action related to a health problem is based on personal perceptions and beliefs (Corcoran, 2007). Factors that influence behavior change according to this model are

perceived susceptibility to a condition; perceived seriousness of consequences of the condition; availability of tools to reduce susceptibility or seriousness; belief that behaviour change benefits will outweigh costs; and the belief that the individual has the ability to perform this behaviour change. (Nutbeam & Harris, 2004, p. 10)

Health communication efforts must focus on each of these factors to influence beliefs and inspire behavior change (Berry, 2007).

Using the example of testicular cancer, targeted men will need to be convinced that they are at significant risk for the cancer and that failing to recognize or ignoring signs of the disease can lead to severe consequences, however, self-exams are painless, easy to perform, and an effective tool for early detection. Confidence in personal ability to perform preventative health tasks may be the key to bringing about positive behavior change. Empowering men that they can easily participate in preventative health measures and lessen their risk of metastasis of testicular cancer is paramount in the design of any men's health promotion program targeting early detection of this disease. The principles of the HBM were considered during the design of the survey used for this research so as to increase the applicability of this baseline data to practical health promotion efforts.

### *Implications for Practice*

These results have a number of implications for public health practice. There is an identified need to educate and engage men in Northern Ireland in self-examination practices as a tool for the early detection of testicular cancer. While there is potential for self-exams to cause anxiety in men who find a testicular lump, the literature argues that the benefits of increased disease awareness and early detection outweigh this cost (Evans, Simon, & Wardle, 2010; Huyghe et al., 2007). These results identify that men who have been shown how to properly perform a self-exam by a health professional feel more confident in their ability to perform them, are more likely to perform them regularly, and are more comfortable discussing testicular health with their doctor. Thus, health promoters should offer widespread testicular self-examination educational materials and partner with frontline health care staff on talking to men about their testicular health. In doing so, they can empower men to take charge of their testicular health and potentially increase self-efficacy levels toward self-exams. Health promoters should choose a setting conducive to testicular self-exam, such as posters placed in a shower room, as the appropriate setting can be crucial to the success of an initiative (McCullagh et al., 2005). Delivering information within workplaces and university settings is a suggested method

of reaching out to men 18 years and older who may be unable to access programs run during business hours (White & Witty, 2009).

These survey results indicate that testicular cancer/self-exam interventions in Northern Ireland should also be tailored toward younger men who reported lower levels of knowledge and awareness and generally ranked self-exams as less important than older men. Health promoters can adapt principles of youth engagement as a health promotion strategy to engage young men. Youth engagement aims to create meaningful roles for young people through the provision of opportunities for youth to become involved in decisions that affect their health (City of Toronto, 2006). By involving young people in the design, implementation, and evaluation of programs and services these programs and services become more responsive to young people's needs and priorities (London, Zimmerman, & Erbstein, 2003). Youth engagement has been linked to improved coping skills and better health practices. In particular, health promotion interventions that are delivered by youth to youth may alter social norms or attitudes toward health behaviors (McCall & Shannon, 1999). Thus, getting youth involved in the planning and delivery of testicular cancer initiatives in Northern Ireland may lead to paradigm shifts in the way young men think about testicular cancer/self-exam and men's health in general.

The lower than average response rate has highlighted the difficulties health promoters face in engaging men in health-related efforts and has reinforced the international literature on men's health behaviors. Masculinity norms are often associated with less healthy behaviors in men (Buckley & Ó Tuama, 2010; De Visser et al., 2009). These social norms may be due to traditional masculine gender socialization that encourage men to put their health at risk (De Visser et al., 2009) or fear of appearing weak (O'Brien et al., 2005; Singleton, 2008; Vogel et al., 2011). Health promoters are challenged to change traditional views by emphasizing that good health maintenance can lead to the achievement of optimum vitality. This means empowering men to take part in testicular self-examinations and to talk to their doctor about testicular health while reinforcing their sense of masculinity. One way to achieve this is by taking an approach whereby being healthy becomes a masculinity norm. A practical example of this is the "Movember" campaign which raises awareness of male-specific cancers while using a traditional symbol of masculinity, the moustache, as its foundation. This initiative began in 2003 in Australia and as of 2013 had become a global movement with more than 3 million participates across 21 countries (Movember Canada, 2013). This campaign effectively created a new norm in which being health conscious is considered masculine. Health promoters in Northern Ireland and

abroad can use this success as a template to potentially increase knowledge and performance of self-exams.

Health promoters in Northern Ireland should take note of the current political atmosphere surrounding men's health promotion as it may be useful in taking a comprehensive approach and bringing about policy-level changes. The WHO has a Strategy for Gender Mainstreaming that could be used to support advocacy efforts for policy-level changes. It encourages men's health promotion interventions and more gender-specific health research. An additional supporting document is the 2006 Northern Ireland Cancer Control Programme which emphasizes the importance of early detection and public awareness of the signs/symptoms of cancer with specific mention given to testicular cancer (Department of Health, Social Services and Public Safety [DHSSPS], 2006). The 2010 Northern Ireland Service Framework for Cancer Prevention, Treatment and Care states that the public should be aware of the early signs/symptoms of cancer so they know when they need to go to their doctor (DHSSPS, 2010). This framework calls for the collection of baseline data on knowledge/awareness of signs/symptoms and barriers to seeing a doctor. It acknowledges that this baseline information will inform the development of appropriately targeted awareness campaigns (DHSSPS, 2010) and can be used to help justify ongoing men's health promotion research in Northern Ireland. This political setting sets the stage for potential government-backed research, programs, funding, and policy changes regarding men's health.

Last, the finding that area deprivation affected how men view their risk for testicular cancer but did not affect knowledge, awareness, and attitudes toward the disease or self-exam suggests that health promoters can tailor initiatives in areas of higher deprivation to increase awareness of testicular cancer risk. However, given the current findings, overall testicular cancer/self-exam interventions that engage men, provide information on the disease, and emphasize the importance of early detection need to be delivered across all areas of Northern Ireland.

## Conclusion

Overall, the findings from this study clearly demonstrate the need for targeted health promotion efforts regarding testicular cancer and self-examination within Northern Ireland. These findings, supported by the literature, identify the need for health promotion efforts that engage young men from across the country with the aim of increasing self-efficacy in self-examination while considering the impact of masculinity norms and backed by policy-level support. As with any health promotion initiative a needs assessment should be conducted to dictate how, when, and where these strategies should be

implemented. While these findings are specific to Northern Ireland, the proposed health promotion strategies outlined in this article could potentially be implemented in many countries.

### Acknowledgments

We would like to extend our gratitude to Dr. Caroline Hughes and the Health Promotion team at Action Cancer Belfast for their assistance with the research sampling. We would also like to thank those who participated in the study.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### References

- Berry, D. (2007). *Health communication: Theory and practice*. London, England: Open University Press.
- Brewer, G., Roy, M., & Watters, J. (2010). Testicular self-examination in an adult community sample. *American Journal of Men's Health, 5*, 57-64.
- Buckley, J., & Tuama, S. Ó. (2010). 'I send the wife to the doctor' – Men's behaviour as health consumers. *International Journal of Consumer Studies, 34*(5), 587-595.
- Cancer Research UK. (2011). *Types of cancer: Testicular cancer*. Retrieved from [http://www.cancerresearchuk.org/cancer-info/print/%20?files=CRUKMIG\\_100019826,CRUKMIG\\_100019828,CRUKMIG\\_100019830,CRUKMIG\\_100019829,CRUKMIG\\_100019827,CRUKMIG\\_100019831](http://www.cancerresearchuk.org/cancer-info/print/%20?files=CRUKMIG_100019826,CRUKMIG_100019828,CRUKMIG_100019830,CRUKMIG_100019829,CRUKMIG_100019827,CRUKMIG_100019831)
- City of Toronto. (2006). *InvolveYouth2: A guide to meaningful youth engagement*. Retrieved from <http://www.toronto.ca/involveyouth/pdf/youth2inal.pdf>
- Corcoran, N. (2007). *Communicating health: Strategies for health promotion*. London, England: Sage.
- Cronholm, P. F., Mao, J. J., Nguyen, G. T., & Paris, R. T. (2009). A dilemma in male engagement in preventive services: Adolescent males' knowledge and attitudes toward testicular cancer and testicular self-exam. *American Journal of Men's Health, 3*, 134-140.
- Daley, C. M. (2007). College men's knowledge, attitudes, and beliefs about testicular cancer. *American Journal of Men's Health, 1*, 173-182.
- De Visser, R. O., Smith, J. A., & McDonnell, E. J. (2009). "That's not masculine": Masculine capital and health-related behaviour. *Journal of Health Psychology, 14*, 1047-1058.
- Department of Health, Social Services and Public Safety. (2006). *Regional cancer framework: A cancer control programme for Northern Ireland*. Belfast, Northern Ireland: Author.
- Department of Health, Social Services and Public Safety. (2010). *Service framework for cancer prevention, treatment and care*. Belfast, Northern Ireland: Author.
- Evans, R. E. C., Simon, A. E., & Wardle, J. (2010). Public perceptions of the harms and benefits of testicular cancer education: A qualitative study. *Cancer Epidemiology, 34*, 212-219.
- Garner, M. J., Turner, M. C., Ghadirian, P., & Krewski, D. (2005). Epidemiology of testicular cancer: An overview. *International Journal of Cancer, 116*, 331-339.
- Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust Web-based studies? A comparative analysis of six preconceptions about Internet questionnaires. *American Psychologist, 59*, 93-104.
- Handy, P., & Sankar, N. K. (2008). Testicular self examination: Knowledge of men attending a large genito urinary medicine clinic. *Health Education Journal, 67*, 9-15.
- Huyghe, E., Muller, A., Mieusset, R., Bujan, L., Bachaud, J.-M., Chevreau, C., . . . Thonneau, P. (2007). Impact of diagnostic delay in testis cancer: Results of a large population-based study. *European Urology, 52*, 1710-1716.
- Kaplowitz, M. D., Hadlock, T. D., & Levine, R. (2004). A comparison of web and mail survey response rates. *Public Opinion Quarterly, 68*, 94-101.
- Lechner, L., Oenema, A., & de Nooijer, J. (2002). Testicular self-examination (TSE) among Dutch young men aged 15-19: Determinants of the intention to practice TSE. *Health Education Research, 17*, 73-84.
- London, J. K., Zimmerman, K., & Erbstein, N. (2003). Youth-led research and evaluation: Tools for youth, organizational, and community development. *New Directions for Evaluation, 2003*(98), 33-45.
- Mahalik, J. R., Levi-Minzi, M., & Walker, G. (2007). Masculinity and health behaviours in Australian men. *Psychology of Men & Masculinity, 8*, 240-249.
- McCall, D., & Shannon, M. (1999). *Youth led health promotion, youth engagement and youth participation: A research review* (Prepared for Tobacco Control Unit, Health Canada). Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.622.4226&rep=rep1&type=pdf>
- McClenahan, C., Shevlin, M., Adamson, G., Bennett, C., & O'Neill, B. (2007). Testicular self-examination: A test of the health belief model and the theory of planned behavior. *Health Education Research, 22*, 272-284.
- McCullagh, J., Lewis, G., & Warlow, C. (2005). Promoting awareness and practice of testicular self-examination. *Nursing Standard, 19*, 41-49.
- McGilligan, C., McClenahan, C., & Adamson, G. (2009). Attitudes and intentions to performing testicular self-examination: Utilizing an extended theory of planned behavior. *Journal of Adolescent Health, 44*, 404-406.
- Michos, A., Xue, F., & Michels, K. B. (2007). Birth weight and the risk of testicular cancer: A meta-analysis. *International Journal of Cancer, 121*, 1123-1131.
- Millar, M. M., & Dillman, D. A. (2011). Improving response to web and mixed-mode surveys. *Public Opinion Quarterly, 75*, 249-269.
- November Canada. (2013). *About November*. Retrieved from <http://ca.november.com/about>
- National Cancer Institute. (2005). *Theory at a glance: A guide for health promotion practice* (U.S. Department of Health



- and Human Services, National Institutes of Health). Retrieved from <http://www.sbccimplementationkits.org/demandrnmch/wp-content/uploads/2014/02/Theory-at-a-Glance-A-Guide-For-Health-Promotion-Practice.pdf>
- National Cancer Institute. (2016). *Testicular cancer screening (PDQ®)—health professional version: Incidence and mortality* (U.S. Department of Health and Human Services, National Institutes of Health). Retrieved from [http://www.cancer.gov/types/testicular/hp/testicular-screening-pdq#link/\\_86\\_toc](http://www.cancer.gov/types/testicular/hp/testicular-screening-pdq#link/_86_toc)
- National Health Service. (2014). *Testicular cancer: Causes*. Retrieved from <http://www.nhs.uk/Conditions/Cancer-of-the-testicle/Pages/Causes.aspx>
- Northern Ireland Cancer Registry. (2013a). *Cancer data: Testis*. Belfast, Northern Ireland: Author.
- Northern Ireland Cancer Registry. (2013b). *Incidence, Prevalence & Survival statistics: 1993-2013*. Retrieved from <http://www.qub.ac.uk/research-centres/nicr/Cancer-Information/official-statistics/BySite/Testis/>
- Northern Ireland Statistics and Research Agency. (2010). *Northern Ireland Multiple Deprivation Measure 2010*. Retrieved from [http://www.nisra.gov.uk/deprivation/nimdm\\_2010.htm](http://www.nisra.gov.uk/deprivation/nimdm_2010.htm)
- Nutbeam, D., & Harris, E. (2004). *Theory in a nutshell: A practical guide to health promotion theories* (2nd ed.). North Ryde, New South Wales, Australia: McGraw-Hill.
- O'Brien, R. K., Hunt, K., & Hart, G. (2005). "It's caveman stuff, but that is to a certain extent how guys still operate": Men's accounts of masculinity and help seeking. *Social Science & Medicine*, *61*, 503-516.
- Pettersson, A., Richiardi, L., Nordenskjold, A., Kaijser, M., & Akre, O. (2007). Age at surgery for undescended testis and risk of testicular cancer. *New England Journal of Medicine*, *356*, 1835-1841.
- Rew, L., McDougall, G., Riesch, L., & Parker, C. (2005). Development of the self-efficacy for testicular self-examination scale. *Journal of Men's Health & Gender*, *2*, 59-63.
- Richardson, N., & Carroll, P. C. (2009). Getting men's health onto a policy agenda: Charting the development of a National Men's Health Policy in Ireland. *Journal of Men's Health*, *6*, 105-113.
- Richiardi, L., Pettersson, A., & Akre, O. (2007). Genetic and environmental risk factors for testicular cancer. *International Journal of Andrology*, *30*, 230-241.
- Singleton, A. (2008). "It's because of the invincibility thing": Young men, masculinity, and testicular cancer. *International Journal of Men's Health*, *7*, 40-58.
- SurveyMonkey.com. (2011). *Privacy policy*. Retrieved from <http://www.surveymonkey.com/privacypolicy.aspx>
- Umeh, K., & Chadwick, R. (2010). Early detection of testicular cancer: Revisiting the role of self-efficacy in testicular self-examination among young asymptomatic males. *Journal of Behavioral Medicine*, *39*, 151-160. doi:10.1007/s10865-010-9262-z
- Vadaparampil, S. T., Moser, R. P., Loud, J., Peters, J. A., Greene, M. H., & Korde, L. (2009). Factors associated with testicular self-examination among unaffected men from multiple-case testicular cancer families. *Hereditary Cancer in Clinical Practice*, *7*(1), 11.
- Vogel, D. L., Heimerdinger-Edwards, S. R., Hammer, J. H., & Hubbard, A. (2011). "Boys don't cry": Examination of the links between endorsement of masculine norms, self-stigma, and help-seeking attitudes for men from diverse backgrounds. *Journal of Counseling Psychology*, *58*, 368-382. doi:10.1037/a0023688
- Ward, K. D., Vander Weg, M. W., Read, M. C., Sell, M. A., & Beech, B. M. (2005). Testicular cancer awareness and self-examination among adolescent males in a community-based youth organization. *Preventive Medicine*, *41*, 386-398.
- Wardle, J., Steptoe, A., Burckhardt, R., Vogeles, C., Vila, J., & Zarczynski, Z. (1994). Testicular self-examination: Attitudes and practices among young men in Europe. *Preventive Medicine*, *23*(2), 206-210.
- White, A., & Witty, K. (2009). Men's under use of health services: Finding alternative approaches. *Journal of Men's Health*, *6*, 95-97.
- World Health Organization. (2016a). *Gender, equity and human rights*. Retrieved from <http://www.who.int/gender-equity-rights/understanding/gender-definition/en/>
- World Health Organization. (2016b). *Health impact assessment: Determinants of health*. Retrieved from <http://www.who.int/hia/evidence/doh/en/>