
Knowledge of erectile dysfunction and pelvic floor disorders among young adults: a cross-sectional study

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Introduction: The prevalence of pelvic floor disorders (PFD) in aging women is comparable to the prevalence of erectile dysfunction (ED) in aging men. The objective of this study was to assess young adults' familiarity with the definition, prevalence, etiology, and treatment of PFD and ED.

Materials and methods: Women and men aged 18-40 years completed a validated survey (Prolapse and Incontinence Knowledge Quiz) to assess knowledge of urinary incontinence (UI) and pelvic organ prolapse (POP). Both groups completed a similar questionnaire created to assess knowledge of ED. Participants were asked to estimate the prevalence of these conditions and to identify their source(s) of knowledge.

Results: Of 377 respondents, 65% were female and 35% were male. Respondents underestimated the prevalence of these disorders and were significantly worse at estimating the prevalence of PFD than ED. Men and women had significantly less knowledge of POP ($67\% \pm 32$, compared to ED ($83\% \pm 20$) and UI ($82\% \pm 22$), $p < 0.001$). Men and women did not differ in their knowledge about UI and POP, but men had significantly more knowledge about ED than women ($87\% \pm 18$ versus $81\% \pm 21$, $p = 0.008$). Higher education level and increased age were associated with better knowledge of PFD and ED.

Conclusions: Despite high education levels, young adults in our study had a worse understanding of POP compared to UI or ED. Women knew more about ED than about POP, a condition that may affect them during their lifetime.

Key Words: pelvic floor disorders, erectile dysfunction, education, awareness

Introduction

Pelvic floor disorders (PFD) refer to a range of conditions related to a loss of normal pelvic support of pelvic structures. They symptomatically present as pelvic organ prolapse (POP) with a bulge or sense of something dropping/falling out of the vaginal area, urinary incontinence, or bowel incontinence. Symptomatic PFD negatively impact quality of life,

generate significant healthcare costs, and are becoming increasingly prevalent as the population ages. Based on Wu et al's 2014 article on the prevalence of symptomatic PFD in the United States, 39% of women will suffer from a PFD in their 60's.¹ The impact of PFD is significant, as indicated by the 11%-19% of women who will undergo surgery for PFD by age 80.² The societal burden caused by PFD is expected to increase as the United States population ages.

Interestingly, the prevalence rates of erectile dysfunction (ED) in men are similar to the prevalence rates of PFD in women. Results of the National Health & Nutrition Examination Survey published in 2007 reported that 43.8% (95% CI, 38.1%-49.4%) of men between the ages of 60-69 years are affected by ED.³

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Older men are particularly affected by ED, and while approximately 18 million men are estimated to be currently affected by ED, this number is estimated to increase with the aging population.³

Although the latest prevalence data for ED and PFD suggest the proportion of affected men and women are similar, the general public is poorly informed about the existence, causes, and management of PFD.^{1,3} The primary aim of this study is to assess young men and women's knowledge of ED and PFD. It is our hypothesis that young men have a much better understanding of the definition and prevalence of ED, than young women do of pelvic floor disorders. We conducted the first assessment of young men and women's understanding of these conditions.

Material and methods

The institutional review board determined that this study met criteria for exemption and informed consent was presumed based on voluntary completion of the questionnaire. This was a cross-sectional survey conducted between September and November 2013. Potential participants were young community dwelling men and women between the ages of 18 and 40 who were English speaking and able to complete an online questionnaire. Participants were approached at academic institutions local to the Washington DC area (Georgetown University, George Washington University, Catholic University), local business establishments (food courts, coffee shops, and office buildings), and a local community fair and given a handout with instructions on how to access the online survey. Additionally, participants were invited to share the survey link with their friends and colleagues via forms of social media (Facebook, Twitter and email). Respondents were not restricted to a geographic area. Exclusion criteria were lack of Internet access to complete the online survey, inability to complete a questionnaire in the English language, or age over 40.

Participants completed a 4-part survey designed to assess knowledge, prevalence, etiology, and treatment of ED and PFD. Part one of the survey collected information on the patient's demographics (age, gender, education level and race). Part two assessed knowledge about urinary incontinence (UI) and pelvic organ prolapse (POP), using a reliable and validated questionnaire called the Prolapse and Incontinence Knowledge Quiz (PIKQ).⁴ The PIKQ is comprised of a 12-item section to assess knowledge about UI and a separate 12-item section to assess knowledge about POP. Part three of the survey assessed knowledge of ED. Because a validated instrument does not exist to

evaluate knowledge of ED, we developed a 12-item section that mirrored the UI and POP domains of the PIKQ. All questionnaire items were ensured to be at an eighth-grade reading level or below. Each scale item was given a score of 1 if answered correctly and a score of 0 if not answered correctly. Patients were also given a score of 0 if they answered "don't know" based on the presumption that an answer of "don't know" implied lack of knowledge about the question. The max score for each 12-item domain (UI, POP, ED) was 12, with a range of scores from 0 to 12 (with 12/12 scoring 100%).

In part four of the survey, participants were asked to identify the source of their knowledge of these conditions (school/course, friend/family, personal experience, or media/TV/internet). Finally, participants were asked to estimate the prevalence of these conditions by answering the question "what percent of WOMEN will develop a pelvic floor disorder such as urinary incontinence or pelvic organ prolapse by the time they are 60 years old?" and "What percent of MEN will develop erectile dysfunction by the time they are 60 years old?" Participants selected from a range of available choices: < 10%, 11%-30%, 31%-50%, 51%-75%, > 75%. An answer was marked correct if the appropriate range was selected. The appropriate range was defined as 31%-50% for both men and women, based on the most recent prevalence data for POP and ED in Wu et al and Selvin et al respectively.^{1,3}

Descriptive statistics were used to describe patient characteristics. The means and standard deviations for continuous variables and frequencies and percentages for categorical variables were calculated. The differences in the averages between two groups were tested using Wilcoxon rank sum tests. The differences in the averages between three or more groups were tested using Kruskal-Wallis tests since normality assumption was not satisfied. For categorical variables, Chi-squared test was used to examine differences, a p value of < .05 was considered a significant.

Results

Three hundred and seventy seven young men and women, aged 18-40, completed our questionnaire. A total of 369 respondents (98%) accessed the survey link after being approached in person or having received the link via Facebook or email, 8 respondents (2%) accessed the survey via Twitter. The majority of participants fell within the age range of 22-30. There were more female than male respondents (64.7% versus 35.3%). Participants were highly educated and Caucasian race was most frequency represented, Table 1.

TABLE 1. Demographics

| Characteristics | Number (%) |
|-------------------------|------------|
| Gender | |
| Female | 244 (64.7) |
| Male | 133 (35.3) |
| Age | |
| 18-21 | 42 (11.3) |
| 22-30 | 232 (62.5) |
| 31-40 | 97 (26.2) |
| Race | |
| Caucasian | 257 (68.4) |
| Asian | 58 (15.4) |
| African | 22 (5.9) |
| Hispanic | 15 (4.0) |
| Other | 24 (6.4) |
| Highest education level | |
| Grade school | 2 (0.5) |
| High school | 7 (1.9) |
| Some college | 40 (10.6) |
| College degree | 106 (28.1) |
| Graduate degree | 222 (58.9) |

There was a significant difference in baseline knowledge of these conditions, with both men and women scoring highest on the ED and lowest on the POP sections ($83\% \pm 20$ versus $67\% \pm 32$, $p < 0.001$). Higher education level and older age was associated with a significant increase in knowledge in all domains: UI, POP, and ED, Table 2. Caucasian race was associated with increased knowledge in the UI and ED question domains, however, no difference among races was identified for knowledge of POP ($p = 0.07$).

When comparing genders, men scored significantly higher in the ED domain than women ($87\% \pm 18$ versus $81\% \pm 21$, $p = 0.008$). There was no difference in knowledge of UI or POP between men and women (UI: $81\% \pm 24$ versus $82\% \pm 20$, $p = 0.85$; ED: $66\% \pm 35$ versus $67\% \pm 30$, $p = 0.62$).

Participants identified school as the most common source of knowledge about PFD and ED. Media (TV, movies, Internet) was the second most common source of knowledge. Media played a bigger role as a source of knowledge about ED, as compared to UI or POP (55.7% (210/377) identified media as a source of knowledge about ED, as compared to 35.2% (133/377) for UI, and 14.0% (53/377) for POP).

Overall, participants tended to underestimate the prevalence of PFD and ED, and were worse at estimating the prevalence of PFD as compared to ED (33.6% of participants correctly estimated prevalence of PFD, as compared to 44.2% for ED). Women and men had an equal understanding of the prevalence of ED.

Discussion

PFD and ED are for many older individuals, part of the aging process. In the United States, approximately 40% of males and females alike will suffer from these conditions after the age of 60.^{3,4} Because their prevalence increases with age, we are likely to see large increases in these conditions given that the United States population 65 years and older is expected to double from 40.2 million in 2010 to 88.5 million in 2050.⁵ Both of these disorders contribute significant cost to the health care system and burden for the individuals effected.

Despite its prevalence, the general public is poorly informed about the existence, causes, and management of PFD.⁶⁻⁸ Only a few studies have been done to assess disease understanding of PFD, but these studies have generally been limited to older women who are affected by the disease process.⁶⁻⁸ In a study to assess older women's knowledge of POP, Senekjian et al asked women with some degree of POP on office gynecologic examination whether they were familiar with the term POP. Significantly more women with symptoms of vaginal bulge knew the term POP as compared to those who were asymptomatic (76% versus 49%, $p = 0.001$).⁶ Anger et al in a study to assess health literacy and

TABLE 2. Influence of age on knowledge of pelvic floor disorder and erectile dysfunction

| | Age (18-21) n = 42 | Age (22-30) n = 232 | Age (31-40) n = 97 | p value |
|-----------------------|-----------------------|------------------------|-----------------------|----------|
| Urinary incontinence | 9.0 \pm 2.4 | 9.8 \pm 2.6 | 10.2 \pm 2.4 | 0.0006 |
| Pelvic organ prolapse | 5.7 \pm 3.6 | 8.1 \pm 3.7 | 8.7 \pm 3.8 | < 0.0001 |
| Erectile dysfunction | 8.5 \pm 2.3 | 10.0 \pm 2.4 | 10.5 \pm 2.0 | < 0.0001 |

Scores are reported for each 12-item domain (urinary incontinence, pelvic organ prolapse, erectile dysfunction), with a range of scores from 0 to 12. Higher scores indicate increased knowledge.

disease understanding among women with pelvic floor disorders demonstrated that aging women affected by PFD have a poor understanding of pelvic floor conditions despite high health literacy. Aging women in their study had a worse understanding of POP as compared to UI.⁷ These studies demonstrate a poor understanding of PFD in mature elderly patients who have been diagnosed with the condition. Our study is the first to evaluate what younger women know and understand about PFD and we similarly see worse understanding of POP than of UI among our participants.

Despite ED and PFD having similar prevalence rates, ED is a more familiar term within American vernacular, and our results support this finding. Men and women in our study knew significantly more about ED than about POP (83% versus 67%, $p < 0.001$). We suspect the cause for this knowledge discrepancy is multifactorial. The familiarity with ED may be somewhat a result of the National Institute of Health Consensus Panel, which in 1992 set out to improve public awareness on aspects of human sexuality and sexual dysfunction. With increased publicity, the general view of ED has evolved from a humiliating psychogenic disorder to an organic medically treatable condition. This has legitimized ED as a health and quality of life issue for aging men.⁹

We found that our participants relied heavily on the media to provide information about these conditions, especially ED (55.7% of participants stated media was their #1 source of knowledge for ED, 35.2% for UI, and 14.0% for POP), and that they knew significantly more about ED and UI than POP. The contribution of the pharmaceutical industry in advertising for the many medications used to treat ED and UI likely plays a role in the increased knowledge of these conditions. Because both ED and UI can be treated with commercialized medications, young adults are exposed to the terms UI and ED through media commercials.

Unfortunately, there is evidence to suggest physicians may not be taking the opportunity to educate their patients about PFD. A survey that assessed postpartum patients' understanding of the connection between pregnancy and PFD indicated only about half received any information from their physicians about UI and less than a third received information about fecal incontinence or change in vaginal caliber.¹⁰ In this study, information provided by physicians to pregnant patients about PFD was significantly less than education on general pregnancy topics.¹⁰ This underscores the importance of training health care professionals to acknowledge the many

women who have PFD. Given the risk factors of age and pregnancy in the development of PFD, the pre-partum office visit may be a unique opportunity to educate patients about some of the anticipated postpartum pelvic floor changes. Although it may not be possible to prevent PFD entirely, introducing knowledge about PFD and the methods of treatment may allow for earlier preventative intervention. Pelvic floor physical therapy could be a service routinely made available to women in the post-partum period, similar to postpartum depression groups, breastfeeding education, and newborn care classes. A postpartum pelvic floor program, if made available routinely, could have the advantage of reaching large numbers of women. It seems that physicians may be underutilizing an opportunity to increase knowledge and awareness about PFD in young women.

Fewer than half of the participants in our study correctly estimated the prevalence of either ED or PFD (44.2% and 33.6% respectively). Despite high education levels, respondents tended to underestimate the prevalence of these disorders and were significantly worse at correctly estimating the prevalence of PFD as compared to ED. When broken-down by gender, men were better at estimating the prevalence of ED, than young women were at estimating the prevalence of PFD (45.1% versus 37.7% respectively). For young women, this indicates a lack of awareness about a frequent element of their aging process.

The weaknesses with this study are those associated with acquiring information through voluntary questionnaires. Participants completed the survey anonymously; therefore we were unable to confirm that reported age and demographics were accurate, or whether participants used information sources to look up responses at the time of survey completion. Because this questionnaire was distributed electronically, there are certain sampling biases that we could have encountered. Distributing the survey through social media, while an affective method for capturing young participants, also creates a "snowball effect" where participants who pass along the survey to their media contacts may capture those with similar demographic characteristics. This may explain why 59% of our respondents were highly educated, having completed some level of graduate school. Given the distribution method of our survey, our respondents may also have been more likely to obtain knowledge of these conditions from the Internet or other media sources.

Increased effort to educate young people, especially women, about PFD is essential. Women in our study were more familiar with the etiology, prevalence, and treatment for ED than for POP, a condition that

may affect them during their lifetime. It is clear that media sources continue to play important roles in the acquisition of knowledge in this age group, however the role of physicians in educating this group of young women should not be overlooked. The postpartum period in particular, may be considered an appropriate time to effectively target the women who are most likely to be affected by PFD. We should also consider new educational tools and public awareness campaigns that may enhance the understanding and familiarity of these conditions, with an emphasis on POP.

Conclusions

Despite high education levels, young men and women in our study have a worse understanding of POP, as compared to UI or ED. Men knew the most about the condition that affects them, ED, and they knew significantly more about this condition than women. Women, however, were more familiar with the etiology, prevalence, and treatment for ED than for POP, a condition that may affect them during their lifetime. □

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