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Ostomy Complications and Quality of Life of Ostomy Support Belt/Garment Wearers

A Web-Based Survey

Joyce Pittman ◆ Janice Colwell ◆ Madhuri S. Mulekar

ABSTRACT

PURPOSE: The purpose of this study was to examine ostomy complications and health-related quality of life (QOL) in individuals with an ostomy who wear an ostomy support belt/garment.

DESIGN: A mixed-methods descriptive study.

SUBJECTS AND SETTING: Two hundred two community-living adults with an ostomy were recruited using an industry distribution list. The target sample had no geographic restrictions.

METHODS: Descriptive analysis was conducted for all outcomes. Participants were separated into groups depending on type of ostomy belt or belt/garment worn or none. All categorical data were summarized using percentages and numerical data using mean \pm standard deviation. Association between categorical factors was evaluated using a χ^2 test and proportions of occurrences from 2 groups were compared using a 2-proportion z-test. The mean outcomes for 2 or more groups were compared using *t* tests or analysis of variance (ANOVA), respectively. If ANOVA showed difference among groups, post hoc analysis of group means was conducted using Tukey's Honestly Significant Difference (HSD) test.

RESULTS: Two hundred two respondents completed the survey. Of the 174 participants who responded to the survey question on leakage, 157 (90%) reported experiencing leakage and 135 (77.59%) reported rash or skin irritation. Comparison of whether participants had ever experienced a leakage event was not significantly different across groups ($P = .3663$). Those who wore an ostomy support belt/garment reported leakage less often (less than once a month) versus respondents who wore other types of belts or no belt ($n = 49, 73.13\%$ vs $n = 53, 59.55\%$; $P = .0388$). Of the 174 participants who responded to the peristomal skin question, 135 (77.59%) participants reported peristomal skin complications. Significantly fewer participants who wore an ostomy support belt/garment reported having peristomal skin irritation compared to those who wore other types of belts or no belt (69.01% vs 84.16%; $P = .0080$). The mean cumulative total City of Hope Quality of Life (COH QOL) Ostomy score for all participants was 6.45 ± 1.36 out of 10, with the psychosocial domain scoring the lowest at 5.67 ± 1.30 out of 10. No significant differences were observed in mean QOL domain and total scores by those who wore an ostomy support belt/garment, other type of belt/garment, and none. When comparing COH QOL mean scores and leakage frequency of more/less once a month, those who reported leakage more often had significantly worse QOL scores in all 4 domains as well as total scores: physical ($P = .0008$), psychological ($P = .0154$), social ($P = .0056$), spiritual ($P = .0376$), and total COH QOL score ($P = .0018$).

CONCLUSION: This study provides important information related to ostomy complications and QOL associated with wearing an ostomy belt or belt/garment. The use of an ostomy support belt/garment may offer an additional intervention to decrease frequency of leakage and peristomal skin irritation and improve QOL.

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INTRODUCTION

Approximately 1 million people in the United States are living with an ostomy, and more than 100,000 new ostomies are created annually in North America.¹ Regardless of the reason for having ostomy surgery, management of an ostomy involves the use of a pouching system that fits around the stoma in order to collect and contain the effluent. This pouching system relies on an adhesive seal to secure and maintain the pouch around the stoma. The goal for a person with a stoma is to find a pouching system that provides a reliable wear time without leakage from application to removal and helps maintain intact peristomal skin.² Despite the availability of multiple pouching systems, as many as 80% of persons living with an ostomy experience

ostomy-related complications that often diminish their quality of life (QOL).^{3,4}

To better understand how ostomy complications influence QOL, we must understand what is meant by health-related QOL. It is a multidimensional concept that includes both positive and negative perceptions of how well a person functions in their life and their perceived well-being in physical, mental, and social domains of health.⁵ Ostomy-related complications that affect QOL are influenced by numerous factors; for example, leakage of effluent from an ostomy pouching system lowers QOL.⁶⁻⁸ Evidence regarding the prevalence of pouch effluent leakage is limited. Ratliff⁹ examined 200 people with an ostomy and 87% reported pouch leakage with variable frequency. Claessens and associates¹⁰ examined 4138 persons with an ostomy and found that 76% experienced leakage over the past 6 months and 91% worried about pouch effluent leakage.

Leakage can be defined as undermining of the pouch seal when fecal matter or urine comes in contact with the peristomal skin. Exposure of the peristomal skin to stoma effluent may cause irritant contact dermatitis, also referred to as peristomal moisture-associated skin damage (PMASD).¹¹ Typically, PMASD is a partial-thickness injury but it may become full thickness in some cases. Any loss of the epidermis results in a moist painful area that interferes with the seal of the pouching system, often resulting in a cycle of continued effluent leakage and increased severity of the peristomal skin irritation. Leakage is associated with the presence and severity of peristomal skin complications such as PMASD.⁶⁻⁸ Herlufson and colleagues examined 202 people with an ostomy and found that 45% had peristomal skin complications; 77% of those skin complications were related to exposure of the peristomal skin to stoma effluent. Other researchers have reported that up to 80% of patients experience ostomy complications.¹²⁻¹⁵ Therefore, examining interventions that address a reliable pouch seal and leakage prevention is key to future improvements in QOL for the patient with a fecal and/or urinary diversion.

The effectiveness of multiple interventions to minimize leakage and peristomal skin irritation and to improve QOL has been evaluated.¹⁶⁻¹⁸ These include a variety of ostomy pouching systems in different styles and materials, cutting skin barriers to various sizes and shapes, using flat and different degrees of convex skin barriers, and the use of accessory products such as skin barrier rings and strips. Other nursing interventions examined are stoma site marking,^{19,20} patient education,²¹ and interventions to alleviate or manage high liquid output.¹⁸ Another commonly used intervention is the ostomy belt, but very little evidence is available about its use and effect on the development of ostomy complications and leakage as well as on QOL.

Historically, ostomy belts have been in use for many years but they vary in design, purpose, and function (Figure 1). The traditional ostomy belt is a thin elastic belt that is attached to the pouch or flange that exerts pressure to the pouch seal for added security but does not support the pouch contents (Figure 1A). Hernia support belts are elastic binders with an opening for the pouching system (Figure 1B); they provide hernia support to the parastomal area, reducing hernia protrusion and stabilizing the topography of the peristomal area, enabling an improved pouching system seal.²² A more recent belt design has emerged with some unique features that are different from the previously noted belts; it contains a compartment that provides support and concealment of the pouch during daily and extreme activities (Figure 1C). For purposes of this study, we have defined this ostomy belt as

a belt/garment with a compartment in which the pouch fits and is held snugly against the body, allowing the pouch to fill evenly while the belt/garment supports the weight of the pouch (Figure 1C). Because of the variety in design, purpose, and function of ostomy belts, more information is needed on the effect of these products on ostomy complications and health-related QOL of the person wearing them. Therefore, the purpose of this study was to examine ostomy complications and QOL in individuals with an ostomy who wear an ostomy support belt/garment. Specific study aims were as follows: (1) to identify the existence and frequency of occurrence of ostomy complications such as leakage and peristomal skin irritation; (2) to measure QOL in those individuals with an ostomy who wear an ostomy support belt/garment; and (3) to analyze relationships among ostomy complications and QOL in those individuals who wear an ostomy support belt/garment.

METHODS

In this mixed-methods descriptive study, a Web-based survey was administered to community-living adults with an ostomy. No geographic restrictions were placed on respondents. Quantitative, predefined qualitative, and free-response or open-ended qualitative data were collected, but only the quantitative and predefined qualitative results are reported here.

Eligibility criteria to participate in this study were as follows: older than 18 years, able to read, Internet access, English speaking, having an ostomy (urostomy, ileostomy, or colostomy), and willing to complete the survey. Participants were recruited using a large industry distribution mailing list of those individuals who had given permission for future contact. The institutional review board at University of South Alabama (19-484) reviewed and approved this study.

Instruments

The electronic Web-based survey was developed by the investigators (J.P., J.C., M.S.M.) for purposes of this study. We incorporated the City of Hope Ostomy Quality of Life (COH QOL) Questionnaire²³ and the Ostomy Complication Severity Index (OCSI).¹⁵ The Web-based survey contained 84 items that included the following: (1) 24 items queried demographic information such as age, education, occupation, ethnicity/race, sex, marital status, reason for ostomy, type of stoma, duration of ostomy, and physical information regarding stoma characteristics; (2) 46 items of QOL information using the COH QOL Questionnaire²⁴; and (3) 14 items of ostomy complications using the OCSI.¹⁵ It also contained 2 open-ended items. The survey took approximately 30 to 45 minutes to complete.

The COH QOL Questionnaire is a comprehensive, multidimensional, self-report instrument designed to assess the QOL for adults who have an ostomy. The QOL items use a 10-point scale response, with 0 = worst outcome/negative QOL to 10 = best outcome/positive QOL. All items are divided into 4 domains without any overlap: physical, psychological, social, and spiritual well-being. Subscale scores for each of these 4 domains are determined as the average score for that domain, that is, by adding the scores for each item in that subscale and then dividing by the number of items in that subscale. A total QOL score is obtained by adding the scores on all 10-point items and dividing by the total number of items.²³ The COH QOL Questionnaire has demonstrated acceptable validity and reliability in multiple studies.^{24,25}

OSTOMY BELT DESIGN TYPES

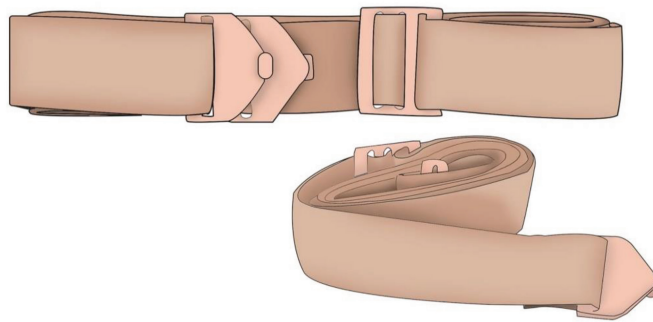


Figure 1A:
Traditional Ostomy Belt

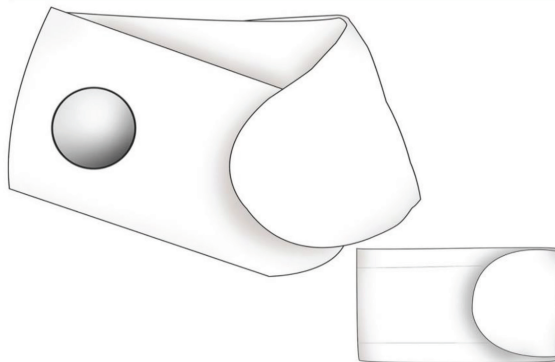


Figure 1B:
Hernia Support Belt



Figure 1C:
Ostomy Support Belt/Garment

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Figure 1. Ostomy belt design types. (A) Traditional ostomy belt. (B) Hernia support belt. (C) Ostomy support belt/garment.

The OCSI is designed to measure the presence and severity of ostomy complications. It contains 9 individual items about leakage, peristomal irritant dermatitis, pain, bleeding, stomal necrosis, stomal stenosis, retraction, mucocutaneous separation, and hyperplasia with response on a Likert scale. Each item is scored on a scale of 0 to 3, and a total score is computed by summing the individual items. Higher scores indicate more severe ostomy complications. Validity and reliability of the OCSI were found to be acceptable.¹⁵ In our study, the OCSI was modified for electronic use and limited to the items about leakage, peristomal irritant dermatitis, hyperplasia, pain, bleeding, retraction, and parastomal hernia. The items were modified using nonmedical terminology, that is, peristomal irritant dermatitis as a rash, hyperplasia as extra tissue growth, and retraction as the current height of the stoma.

Following the development of the initial survey, individuals with an ostomy reviewed the survey for face validity and made

recommendations for improvement. Face validity is defined by Polit and Beck²⁶ as whether an instrument looks like it is measuring what is intended and is often obtained from end users. For this study, we recruited 6 individuals from the community who had an ostomy, 4 females and 2 males, who reviewed and completed a test version of the survey. The individuals reported an average of 12 minutes to complete the survey and that the survey was easy to understand and complete, whether paper or electronic. They also provided specific item rephrasing suggestions and cultural inclusion suggestions. The survey was revised according to their recommendations.

A list of 16,685 potential individuals with an ostomy, who had given permission to be contacted, was provided by the study sponsor (Stealth Belt, Inc, Johnson City, Tennessee). We randomly selected 750 e-mail addresses from this database using the Minitab software, version 18 (State College, Pennsylvania). Due to less than desired response rate, a second list

of 750 randomly selected potential participants was selected using the same process. An introductory e-mail was sent to potential participants via the database management system.²⁷ The invitation included a description of the study, an invitation to participate, and a unique and confidential survey link for each participant. If the participant did not complete the survey within 7 days of the initial invitation, weekly reminder e-mails were sent for 2 additional weeks. The survey remained open for a 3-week period. The database software platform system²⁷ used to collect and store data for this study provided a secure, Web-based environment that is flexible enough to be used for a variety of types of research and an intuitive interface for users to enter data and have real-time validation rules at the time of entry.

Data Analysis

Data were exported to an Excel spreadsheet and imported into statistical software JMP Pro 14.0/15.0 (SAS Inc, Cary, North Carolina).²⁸ Answers to certain questions were reverse-coded according to instructions for the COH QOL Ostomy Questionnaire.²³ All categorical data were summarized using percentages, and numerical data were summarized using mean \pm standard deviation (SD). The association between categorical variables was studied using a χ^2 test, and proportions for 2 groups were compared using a 2-proportions z -test. Means of different groups for numerical variables were compared using a t test (2 groups) or analysis of variance (ANOVA) (>2 groups). Post hoc analysis of group means was conducted using Tukey's Honest Statistical Differences (HSD) test. One-sided t test was used to establish superiority of outcomes for one group over the other such as better outcomes expected for ostomy belt/garment wearers than other belt wearers or none.

RESULTS

Of 1500 adults with an ostomy to whom the Web-based survey was distributed, 202 individuals responded, representing a 13.5% response rate. Of the 196 respondents who reported type of ostomy, 45% had an ileostomy ($n = 89$), 26% had a colostomy ($n = 50$), 14% had a urostomy ($n = 27$), and 7% had multiple ostomies ($n = 13$). Of 173 respondents who answered the leakage question, almost 91% ($n = 157$) reported leakage, with 14% ($n = 22$) having leakage at least weekly. Almost 78% ($n = 135$) reported peristomal skin irritation, with about 20% ($n = 26/128$) experiencing peristomal skin irritation at least weekly. Almost 69% ($n = 119$) of participants wore some kind of ostomy belt. Among respondents who wore a belt, 60% ($n = 71$) wore an ostomy support belt/garment and the remaining 40% ($n = 47$) wore another type of belt. Almost 32% ($n = 55$) did not wear any ostomy support belt/garment. The reasons for wearing a belt included the following: concealment ($n = 7$, 5.88%), increased confidence ($n = 45$, 38%), prevention of leakage ($n = 6$, 5%), and a combination of these reasons ($n = 51$, 43%). See Table 1 for complete summary of sample characteristics.

In order to better understand the study findings, participants were grouped according to the belt wearing status: ostomy support belt/garment wearers, other type of belt wearers, and non-belt wearers.

Aim 1: To examine ostomy complications such as leakage and peristomal skin complications in those individuals with an ostomy who wear an ostomy support belt/garment.

TABLE 1.
Sample Characteristics^a

	Mean \pm SD
Age, y ($n = 171$)	54.91 \pm 14.52
Weight, lb ($n = 194$)	179.87 \pm 39.91
BMI, kg/m ² ($n = 194$)	26.79 \pm 5.21
	Frequency (%)
Sex (male) ($n = 190$)	144 (75.79)
Race (White) ($n = 195$)	177 (90.77)
Marital status (married/partnered) ($n = 196$)	143 (72.96)
Employed (yes) ($n = 174$)	81 (46.55)
Education ($n = 173$)	
High school	34 (19.65)
College/vocational	91 (52.60)
Graduate/doctorate	47 (27.17)
Income ($n = 173$)	
Comfortable	123 (71.10)
Just enough	41 (23.70)
Not enough	9 (5.20)
Health insurance (yes) ($n = 174$)	166 (95.40)
Type of ostomy ($n = 179$)	
Ileostomy	89 (45.41)
Colostomy	50 (25.51)
Urostomy	27 (13.78)
Multiple	13 (6.63)
Use a support belt (yes) ($n = 174$)	119 (68.39)
Type of belt (identified by users via manufacturer) ($n = 118$)	
Stealth belt	71 (60.17)
Hollister/Coloplast/Convatec	23 (19.49)
NuHope	11 (9.32)
Other	13 (11.02)
Why use support ($n = 109$)	
Concealment	7 (5.88)
Increased confidence	45 (37.82)
Prevent leakage	6 (5.04)
Combination	51 (42.85)
What led to having an ostomy? ($n = 174$)	
Cancer	81 (46.55)
Ulcerative colitis	39 (22.41)
Crohn disease	23 (13.22)
Diverticulitis	7 (4.02)
Trauma	2 (1.15)
Other	22 (12.64)
Ostomy duration ($n = 168$)	
0-1 y	54 (32.14)
2-5 y	82 (48.81)
6-10 y	12 (7.14)
>10 y	20 (11.90)

^aSample size reported in parentheses for each characteristic varies because not all respondents answered all questions.

Although 90% ($n = 157$) of the participants in our study had experienced leakage, no significant association was observed between the leakage occurrence/nonoccurrence and the belt wearing status groups (χ^2 , $P = .5194$). However, those who wore an ostomy support belt/garment reported less frequent leakage (less than once a month) as compared to those who wore other types of support belts or no belt (73% vs 60%; $P = .0388$).

About 78% ($n = 135$) of all participants had peristomal skin complications. However, fewer participants who wore an ostomy support belt/garment reported having peristomal skin irritation compared to those who wore the other types of support belts or no belt (69% vs 84%; $P = .0080$).

Aim 2: To examine QOL in those individuals with an ostomy who wear an ostomy support belt/garment.

The mean cumulative COH QOL score for all participants was 6.45 ± 1.36 out of 10, with the lowest score reported for the psychosocial domain (5.67 ± 1.30). Participants who wore an ostomy support belt/garment had higher QOL mean scores in the physical, spiritual, psychological, and total COH QOL Ostomy scores (Figure 2). Nevertheless, there were no significant differences in the mean QOL domain and total scores among the belt-wearing status groups.

Aim 3: To examine relationships among ostomy complications and QOL in those individuals who wear an ostomy support belt/garment.

Significant differences were observed when examining the QOL domain and total mean scores for those with more/less frequent than once a month leakage or peristomal skin irritation (Tables 2 and 3). When comparing the QOL mean scores for leakage frequency, those who reported leakage more often had worse QOL scores in all domains as well as total score: physical ($P = .0008$), psychological ($P = .0154$), social ($P = .0056$), spiritual ($P = .0376$), and total COH QOL score ($P = .0018$). When QOL and total mean scores for peristomal skin irritation were examined, the mean scores in all domains and total were lower when peristomal skin irritation was reported more frequently and the differences were significant in all except the spiritual well-being domain (see Table 3): physical well-being ($P = .0015$), psychological ($P = .0160$), social ($P = .0006$), spiritual ($P = .1356$), and total COH QOL scores ($P = .0018$).

Comparison of QOL domain and total scores for leakage and peristomal skin irritation for only ostomy support belt/

garment wearers showed lower mean scores for more frequent leakage or peristomal skin irritation (see Tables 4 and 5). However, the differences were significant only for physical well-being domain (leakage: $P = .00492$; peristomal skin irritation: $P = .0341$).

DISCUSSION

This study provides important information regarding ostomy complications and wearing various types of ostomy belts/garments, particularly as related to leakage and peristomal skin irritation frequencies, and QOL. Our findings demonstrate that the majority of individuals who have an ostomy will experience leakage and peristomal skin irritation and these complications will negatively influence their QOL. In our study, almost 14% ($n = 22$) of participants experienced weekly leakage and 20% ($n = 26$) had weekly peristomal skin irritation. The QOL was worse for those who experienced these complications.

We found that more than 90% of our respondents reported leakage. This finding is consistent with prior studies demonstrating that leakage is a major complication associated with having an ostomy.^{9,10} Although no significant difference was found as to whether participants had ever experienced a leakage event between those who wore an ostomy support belt/garment ($n = 67$, 93%) and those who wore other belts or no belts ($n = 89$, 87%; $P = .3363$), the leakage frequency was reported as occurring significantly less often in the group wearing the ostomy support belt/garment ($P = .0388$). This reduction in leakage frequency may be important to the person who has an ostomy. Claessens and associates¹⁰ examined over 4000 people with ostomies and found that 76% had leakage and 91% worried about leakage, indicating that the high percentage of people with an ostomy who experience leakage also worry about leakage. A reduction in the frequency of leakage by using an ostomy support belt/garment may be important to the person with a stoma and hence people with an ostomy may consider using the ostomy support belt/garment.

In our study, about 78% ($n = 135/173$) of the participants reported periodic peristomal skin irritation. Other studies confirm that peristomal skin irritation is a common complication.^{3,17,29} Maydick-Youngberg's³ study of 140 individuals with an ostomy noted that 53.57% ($n = 75$) reported irritant contact dermatitis or allergic contact dermatitis. Salvadarena and

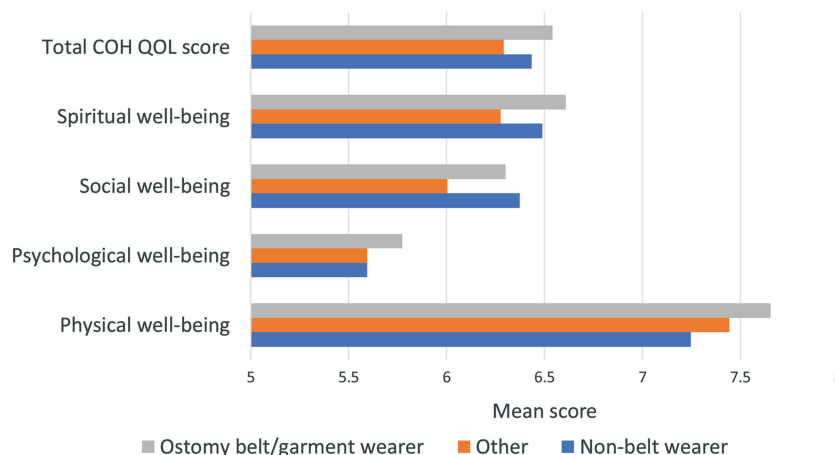


Figure 2. Comparison of the mean COH QOL Ostomy domain and total scores by the belt-wearing status groups. COH QOL indicates City of Hope Quality of Life.

TABLE 2. Comparison of COH QOL Outcomes for Those With More/Less Than Once a Month Leakage

COH QOL Domains	Leakage Frequency	n	Mean ± SD	P (t Test) One-Sided Less > More
Physical well-being	Less freq than 1/mo	103	7.68 ± 1.55	.0008
	More freq than 1/mo	54	6.71 ± 1.89	
Psychological well-being	Less freq than 1/mo	103	5.77 ± 1.23	.0154
	More freq than 1/mo	54	5.30 ± 1.30	
Social well-being	Less freq than 1/mo	102	6.37 ± 1.45	.0056
	More freq than 1/mo	54	5.69 ± 1.64	
Spiritual well-being	Less freq than 1/mo	102	6.63 ± 1.87	.0376
	More freq than 1/mo	54	5.99 ± 2.23	
Total COH QOL score	Less freq than 1/mo	103	6.57 ± 1.20	.0018
	More freq than 1/mo	54	5.88 ± 1.46	

Abbreviations: COH QOL, City of Hope Quality of Life; freq, frequent.

colleagues¹⁷ reported 73 of 153 (47.71%) participants with an ostomy experienced peristomal skin complications, including peristomal skin irritation. Taneja and colleagues²⁹ found almost 37% of the 128 participants had evidence of a peristomal skin complication within 90 days of diversion surgery. Although the peristomal skin irritation rate among our study participants was higher (78%) than these studies, this difference may be attributable to variability in study designs and terminology used which creates challenges when comparing results across studies. Some studies use self-report methodology, while others are observational. Peristomal skin irritation terminology also varies in the literature from PMASD to peristomal skin complications to contact irritant dermatitis to allergic irritant dermatitis to peristomal dermatitis and many others.

Leakage is associated with the presence and severity of peristomal skin complications including peristomal skin irritation.^{3,6-8} Our study findings also support this connection between the leakage and skin irritation. Over 81% of those who had leakage also had peristomal skin irritation (n = 127),

which is significantly higher than that would have occurred by chance (P = .0077). In our study, a significant association was also observed between leakage frequency and peristomal skin irritation frequency (P < .0001). Over 65% of those who have leakage more frequently than once a month also reported having peristomal skin irritation more frequently than once a month. This clearly indicates that leakage must be addressed as it contributes to peristomal skin irritation. Our study suggests that the use of an ostomy support belt/garment may be an intervention to address frequency of leakage and thus influence peristomal skin irritation development. The support belt/garment sustains the weight of the pouch, decreasing the amount of tension on the adhesive skin barrier. This, in turn, helps maintain the pouch seal, reducing leakage frequency and development of peristomal skin complications.

We explored peristomal skin irritation further by examining the wearing or not wearing of various types of ostomy belts/garments and the presence of peristomal skin irritation. We found that fewer participants who wore an ostomy support

TABLE 3. Comparison of COH QOL Outcomes for Those With Peristomal Skin Rash Irritation More Versus Less Than Once a Month

COH QOL Domains	Peristomal Skin Irritation Frequency	n	Mean ± SD	P (t Test) One-Sided Less > More
Physical well-being	Less freq than 1/mo	80	7.68 ± 1.67	.0015
	More freq than 1/mo	48	6.74 ± 1.70	
Psychological well-being	Less freq than 1/mo	80	5.80 ± 1.24	.0160
	More freq than 1/mo	48	5.28 ± 1.36	
Social well-being	Less freq than 1/mo	80	6.51 ± 1.52	.0006
	More freq than 1/mo	48	5.59 ± 1.51	
Spiritual well-being	Less freq than 1/mo	80	6.48 ± 1.93	.1356
	More freq than 1/mo	48	6.10 ± 1.89	
Total COH QOL score	Less freq than 1/mo	80	6.59 ± 1.27	.0018
	More freq than 1/mo	48	5.88 ± 1.31	

Abbreviations: COH QOL, City of Hope Quality of Life; freq, frequent.

TABLE 4.**Comparison of COH QOL Outcomes for Those With Leakage More Versus Less Than Once a Month in Ostomy Support Belt/Garment Wearers**

Only SB Wearers COH QOL Domain	Leakage Frequency	n	Mean ± SD	P (t Test) One-Sided Less > More
Physical well-being	Less freq than 1/mo	49	7.79 ± 1.54	.0492
	More freq than 1/mo	18	6.96 ± 1.82	
Psychological well-being	Less freq than 1/mo	49	5.76 ± 1.33	.1948
	More freq than 1/mo	18	5.52 ± 0.89	
Social well-being	Less freq than 1/mo	48	6.26 ± 1.47	.3639
	More freq than 1/mo	18	6.11 ± 1.60	
Spiritual well-being	Less freq than 1/mo	48	6.70 ± 2.02	.2408
	More freq than 1/mo	18	6.33 ± 1.87	
Total COH QOL score	Less freq than 1/mo	49	6.576 ± 1.29	.1355
	More freq than 1/mo	18	6.19 ± 1.22	

Abbreviations: COH QOL, City of Hope Quality of Life; freq, frequent; SB, support belt.

belt/garment reported peristomal skin irritation as compared to those who wore another type of ostomy belt and non-belt wearers (69% vs 84%; $P = .0096$). We also found that peristomal skin irritation occurred less frequently in respondents who wore an ostomy support belt/garment (Figure 1C) as compared to those who wore others ostomy belt designs (Figures 1A and 1B) and non-belt wearers (35% vs 44%); this difference was not statistically significant.

In our study, health-related QOL was worse when leakage ($P = .0339$) or peristomal skin irritation ($P = .0321$) was present. Specifically, when leakage was present, the mean QOL scores for the physical well-being ($P = .0264$), psychological well-being ($P = .0061$), and social well-being ($P = .0288$) domains were significantly lower (worse); when peristomal skin irritation was present, it was worse for the physical well-being domain ($P = .0155$). These findings confirm findings from other studies that demonstrated individuals' QOL is affected by the condition of their peristomal skin.^{4,30,31} In these studies, peristomal skin irritation was

identified as a contributing factor to poorer QOL. In our study, although not statistically significant but clinically relevant, when examining peristomal skin irritation and QOL in those who wore different types of belts, those who wore an ostomy support belt/garment had better QOL mean scores than others (Figure 2).

The COH QOL Ostomy Questionnaire was used in our study to examine QOL. With a possible range of 0 to 10, the higher COH QOL scores indicate a better QOL. Krouse and colleagues⁵ categorized COH QOL scores as follows: 0-3 = severe impact of QOL; 4-6 = moderate impact on QOL; and 7 or higher = mild impact on QOL.⁵ The overall QOL total mean score for all participants in our study was 6.45 ± 1.36 , indicating a moderate impact on QOL.⁵ Of 4 domains considered, the mean score for physical well-being was the highest at 7.48 ± 1.72 and psychological well-being was the lowest at 5.67 ± 1.30 . These findings are supported by the work of Krouse and colleagues,²⁵ who examined QOL of veterans with and without stomas by diagnosis (cancer vs noncancer). In those

TABLE 5.**Comparison of COH QOL Outcomes for Those With Peristomal Skin Irritation More or Less Than Once a Month in Ostomy Support Belt/Garment Wearers**

Only SB Wearers COH QOL Domain	Peristomal Skin Irritation Frequency	n	Mean ± SD	P (t Test) One-Sided Less > More
Physical well-being	Less freq than 1/mo	32	7.72 ± 1.54	.0341
	More freq than 1/mo	16	6.68 ± 1.89	
Psychological well-being	Less freq than 1/mo	32	5.74 ± 1.31	.3474
	More freq than 1/mo	16	5.59 ± 1.23	
Social well-being	Less freq than 1/mo	32	6.35 ± 1.68	.0997
	More freq than 1/mo	16	5.71 ± 1.55	
Spiritual well-being	Less freq than 1/mo	32	6.62 ± 2.01	.1455
	More freq than 1/mo	16	6.04 ± 1.67	
Total COH QOL score	Less freq than 1/mo	32	6.55 ± 1.36	.0877
	More freq than 1/mo	16	5.99 ± 1.33	

Abbreviations: COH QOL, City of Hope Quality of Life; freq, frequent; SB, support belt.

veterans with stomas due to cancer versus noncancer diagnosis, lower mean scores were reported in the overall QOL total mean score (6.3, 6.8) and psychological well-being (6.4, 6.9), respectively. However, the mean score for physical well-being in our study was higher (7.48 ± 1.72) than the scores reported by Krouse's group (cancer diagnosis: 6.3; noncancer diagnosis: 6.8). Considering that a person with a stoma may have impaired QOL, interventions such as the use of an ostomy support belt/garment may decrease leakage severity, minimize peristomal skin irritation, provide concealment, and improve QOL.

Geng and colleagues³² examined QOL in 729 Chinese ostomy patients. When comparing their findings to our study, the QOL mean scores in those who wore an ostomy support belt/garment were significantly higher in the physical ($P < .0001$), social ($P < .0001$), spiritual ($P < .0001$) well-being domains and total mean score ($P < .0001$). These findings suggest that wearing an ostomy support belt/garment may offer an intervention to improve QOL in individuals with an ostomy.

STRENGTHS AND LIMITATIONS

The strengths of our study are in the use of 2 valid and reliable instruments (COH QOL Ostomy and OCSI) to measure QOL and ostomy complication severity, along with a research team experienced in clinical care and investigations of persons with an ostomy. There were 2 limitations to our study. First, this was a self-report survey rather than a designed experiment; hence, cause-and-effect conclusions about the use of ostomy belt/garment are not possible. Second, the participants were recruited from an industry database, which may limit the generalizability of the findings to other populations.

Nursing Implications

Ostomy research has blossomed in recent years, but its primary focus has been complications or problems without laying a foundation of the characteristics of healthy peristomal skin. Identifying the characteristics of healthy peristomal skin and ways to promote it may be a means of preventing ostomy complications, specifically leakage and peristomal skin irritation. In November 2021, the Wound, Ostomy, and Continence Nursing Society sought to fill this gap by conducting a consensus conference to describe and promote peristomal skin health best practice. Best practice statements were developed to provide new information on addressing peristomal skin health, which may, in turn, assist in minimizing peristomal complications.³³

Leakage is a very common problem that affects most people with an ostomy but has not been well defined in the literature and needs further research. Over 68% of the participants in our study used a support belt/garment for the reasons of concealment, increased confidence, and leakage prevention. The belt/garment wearers provided information that use of this product is beneficial in that it positively influences frequency of leakage. We believe clinicians should be aware of the design of this product and its potential to prevent or reduce leakage and peristomal skin complications. We also encourage additional research to validate this recommendation. WOC nurses must be cognizant that most of their patients will encounter leakage and peristomal skin irritation, and the sheer large percentage of patients who face these problems is a clear indication of need to continue to explore innovative and creative solutions to address them.

CONCLUSION

Leakage and peristomal skin problems are a major component of ostomy complications. Even though leakage and peristomal skin problems are commonly experienced by most people with an ostomy, there are few interventions that have been found to reduce these problems. This study demonstrates that those with an ostomy who experience leakage and peristomal skin irritation had worse QOL. The security of the pouch seal is the key to preventing leakage, which, in turn, can prevent peristomal skin irritation. Evidence supporting the benefit of an intervention that promotes adhesion of the skin barrier and a secure pouch seal provides the clinician with an additional option to offer to those who have an ostomy. The ostomy support belt/garment's design (a compartment in which the pouch fits, thus providing support) may be a contributor to a reduction in leakage and peristomal skin irritation frequencies. Overall, the results from this study indicate the use of an ostomy support belt/garment may reduce ostomy complications and improve QOL.

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Call for Authors: Ostomy Care

- Original research reports comparing surgical outcomes for patients who undergo preoperative stoma site marking by a WOC nurse compared to patients who do not.
- Case studies, case series or original research reports focusing on stomal or peristomal complications.
- Case studies, case series or original research reports focusing on other potential sequelae of ostomy surgery including physical manifestations such as low back pain or psychosocial manifestations such as depression, altered sexual function or embarrassment.
- Original research reports confirming or challenging the assertions of the ongoing WOCN Ostomy Consensus Session including ostomy pouch wear time and minimum standards for immediate postoperative education of patient and family.