



## Functional Constipation in Health Care Professionals at a University Hospital

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ARTICLE

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ABSTRACT

**Objective:** The objective of this study was to determine the frequency of functional constipation, which is a common functional gastrointestinal disorder, in health care professionals.

**Materials and Methods:** In this study, a survey based on the Rome III criteria was conducted with personnel working at the Firat University to determine the frequency of functional constipation. The survey mainly focused on the nightshift personnel. For statistical analysis,  $p < 0.05$  was considered to be significant.

**Results:** A total of 217 individuals participated and were evaluated in the survey. The mean age of the participants was  $30.08 \pm 7.83$  years, and 148 of them were females (68.2%). Seventy-three of these participants (33.2%) complained of constipation, and 47 (21.7%) stated that they were smokers. Fifty-seven of the participants (79.2%) who complained of constipation were females ( $p < 0.05$ ); 41 of them were married (56.9 %;  $p < 0.05$ ). One hundred and fifteen participants (53%) had nightshift on average  $7.63 \pm 2.72$  nights a month, and 42 of them (36.5 %) complained of constipation ( $p > 0.05$ ). However, only one-fourth of participants with constipation used laxatives. A total of 23.6% of participants with constipation stated that their family members had similar issues ( $p < 0.05$ ).

**Conclusion:** The results of this study showed that one-third of the health care personnel at the university hospital had constipation. We concluded that the productivity of the health care personnel, who play an important role in the examination and treatment process of the patients, will increase with training about functional constipation.

**Keywords:** Functional constipation, healthcare professionals, university hospital

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## INTRODUCTION

Constipation is one of the most common gastrointestinal disturbances in the general population. It affects the life of individuals negatively on a daily basis due to decreased quality of life, workforce loss, and other medical problems (1-3). In general, constipation is defined as 2 or less than 2 bowel movements per week, and the patients have difficulty during defecation and have the feeling of incomplete defecation. In individuals who have the habit of delayed defecation, the time of the feces passage is prolonged, and consequently, the absorption of the fecal water is increased, and the stool becomes hard and dry. As the defecation process is painful, the individual tends to avoid defecation, and thus, a vicious circle occurs (4, 5). If this condition remains untreated in childhood, it continues in the adulthood and has a negative impact on the daily life of the individual. Moreover, as it can be a symptom of irritable bowel syndrome (IBS), it should be considered during differential diagnosis.

The health care workers work at an intensive work pace. Delaying defecation due to the workload during the working hours is also a common problem. Functional constipation may develop as a result of the stool-holding behavior. The nightshift health care personnel in our hospital (assistants, nurses, caregivers) are at the risk of functional constipation. Functional constipation is defined as a decrease in the defecation frequency and an increase in the stool stiffness without the presence of an organic disorder. According to the Rome III criteria of functional constipation, 1) it must include 2 or more of the following items: a) straining during at least 25% of defecations, b) lumpy or hard stools in at least 25% of defecations, c) sensation of incomplete evacuation for at least 25% of defecations, d) sensation of anorectal obstruction/blockage in at least 25 % of defecations, e) manual maneuvers to facilitate at least 25% of defecations, f) fewer than 3 defecations per week. 2) Loose stools are rarely present without the use of laxatives. 3) Criteria are insufficient for IBS. According to the Rome III criteria, these issues should last for 6 months with the symptom onset at least 3 months prior to diagnosis (6). According to the Rome IV criteria, which were updated in 2016, the functional bowel disorders are not a separate entity and may overlap considerably (7).

In this study, our objective was to determine the frequency of functional constipation among the health care personnel in our hospital with a survey and to increase their awareness of this topic.

## MATERIALS and METHODS

This cross-sectional study was conducted particularly with the nightshift personnel (research assistant, nurse, patient caregiver) of the Firat University Hospital, Department of Pediatric Gastroenterology, between January 2016 and April 2016. The survey form was handed out to the participants, and they were asked to fill it out. The participants were informed personally by the specialist physician who conducted the survey. The survey was conducted on a voluntary basis. Only 236 participants agreed to answer the questionnaire and completed the survey. Based on the survey data of the participants, those with functional constipation according to the Rome III criteria were determined, and participants were included in the study without any additional systemic disease or organic bowel disease (Crohn disease, ulcerative colitis, etc.), or IBS.

### Survey

The survey contained questions about gender, age, the number of nightshifts per month, the number of the cigarettes in case of being a smoker, marital status, the age at onset, the presence of staining during defecation, the presence of lumpy or hard stools, sensation of incomplete evacuation, sensation of anorectal obstruction/blockage, the presence of manual maneuvers to facilitate defecations, defecation frequency per week (as more or less than 3 times per week), duration of defecation complaints, laxative usage, the frequency of defecation with laxatives, the presence of anorectal lesions (hemorrhoids, fissures, fistulas), the presence of a systemic disease, and the presence of a bowel disorder in the family. The presence of recurrent abdominal pain related to defecation present at least 3 days/month was also

examined to distinguish it from IBS with predominant constipation. Questions about defecation were prepared according to the Rome III criteria.

This study was approved by the Ethics Committee of the Firat University (22.12.2015/22/09). Informed consent was received from the participants.

### Statistical Analysis

Data were evaluated with the Statistical Package for Social Sciences, version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistical variables were given as the unit number (n), percentage (%), mean±standard deviation ( $\bar{x}$ ), minimum value, maximum value, median (M), 25% (Q<sub>1</sub>) and 75% (Q<sub>3</sub>) values. The normal distribution of the numerical data was evaluated with the Shapiro-Wilk normality test and presented with the Q-Q graphics. The Mann-Whitney U test was used because the data were not normally distributed. The Pearson chi-squared exact test for RxC tables was used for the comparison of categorical variables. The accepted limit of significance was  $p < 0.05$ .

## RESULTS

A total of 236 health care personnel from the Firat University Hospital accepted to participate in the survey, and they filled out the form completely. Nineteen participants, who had a systemic disease (hyperlipidemia, hypothyroidism, hypoparathyroidism, asthma, hypertension, epilepsy, migraine, multiple sclerosis, celiac disease, hyperthyroidism, ankylosing spondylitis, polycystic ovary syndrome, IBS, diabetes mellitus), were excluded from the study. Those who positively answered the question about the presence of recurrent abdominal pain related to defecation at least 3 days/month were also excluded. The remaining 217 people were included in the evaluation.

The mean age of the participants was  $30.08 \pm 7.83$  years, and the 148 of them were females (68.2%) and 69 (31.8%) males. A total of 72 of these participants (33.2 %) complained of constipation, and 47 (21.7 %) stated that they were smokers. Among smokers, the mean consumption was  $14.70 \pm 9.36$  cigarettes per day. Nineteen of the smokers (26.4%) also had constipation ( $p > 0.05$ ). The average age of participants with constipation was  $31.19 \pm 7.12$  years and  $29.53 \pm 8.13$  years among participants without constipation. The participants complaining of constipation were older than the participants without complaint ( $p < 0.05$ ). The average age at the onset of the constipation was  $21.20 \pm 8.10$  years. Furthermore, the mean duration of the constipation was  $7.66 \pm 6.41$  years.

Fifty-seven of the participants (79.2%) who complained of constipation were females, and 15 were males (20.8 %;  $p < 0.05$ ); 41 of them were married (56.9 %), and 31 were single (43.1%;  $p < 0.05$ ).

A hundred and fifteen of the 217 participants (53%) had a nightshift. The nightshift personnel had  $7.63 \pm 2.72$  night duties per month on average (1-13 night duty/month). Forty-two of these 115 participants (36.5%) complained of constipation. Only 30 of the participants who did not have nightshift (29.4%) complained of constipation. There was no significant correlation between the nightshift and constipation ( $p > 0.05$ ).

**Table 1.** Demographic data of health care professionals with and without constipation

	Personnel with constipation (n=72) (%)	Personnel without constipation (n=145) (%)	p
Age (years) (M [Q1-Q3])	31 (26-36)	28 (23-33)	0.037
Female/male	57 (79.2)/ 15 (20.8)	91 (62.8)/ 54 (37.2)	0.020
Married	41 (56.9)	55 (37.9)	0.009
Smokers	19 (26.4)	28 (19.3)	0.290
Nightshift personnel	42 (58.3)	73 (50.3)	0.310
Duration of defecation (min) (M [Q1-Q3])	10 (5-15)	3 (3-5)	<0.001
Personnel with anorectal lesions	34 (47.2)	20 (13.8)	<0.001
Personnel with a positive family history of constipation	16 (22.2)	9 (6.2)	<0.001

The stooling duration among the participants complaining of constipation was 10 minutes (range: 5-15 minutes). The same time was 3 minutes (range: 3-5 minutes) among the participants without constipation ( $p < 0.05$ ).

Among the participants with constipation, 18 (25%) were using laxatives, 9 (12.5%) were drinking stool softening herbal teas, and the remaining 45 participants stated that they did not use any medication or herbal supplements. The frequency of laxative use was  $3.75 \pm 1.71$  days per week among the laxative users.

Fifty-four of the total participants (24.9%) had an anorectal lesion (hemorrhoid, fissure, fistula). Thirty-four participants with an anorectal lesion had also complained of constipation (63%). Thirty-eight of the participants with constipation also had an anorectal lesion (%52.8;  $p < 0.05$ ). Thirty-two of the participants with an anorectal lesion had hemorrhoids (59.2%), 19 had an anal fissure (35.2%), and 3 had a fistula (5.5%).

Twenty-six of the participants (12%) had constipation and/or bowel disorders among family member(s). Seventeen of the participants with constipation (23.6%) had bowel disease in the family, and only 9 of the participants without constipation (6.2%) had a positive family history for the bowel disease ( $p < 0.05$ ). Demographic data of health care professionals with and without constipation are shown in Table 1.

## DISCUSSION

In this study, we investigated the frequency of functional constipation in the health care workers in a university hospital. Functional constipation is a common bowel disorder worldwide. Functional constipation, which is more often encountered during the toilet training in childhood and school-starting age, may persist in adulthood if not properly managed. The prevalence of functional constipation is higher in Western countries (14%-29%) than in the Asian region (3%-12%), for example, the prevalence in China is 6% (1). In Turkey, Kasap et al. (8) have conducted a study with 3,214 individuals from 20 cities and have reported the prevalence at 8.3%.

There are only a limited number of studies focused on functional constipation in health care providers in the literature. Zhou et al. (9) showed that functional constipation is more common in nightshift nurses, who could not sleep adequately, than in dayshift nurses. Zhen Lu et al. (10) diagnosed constipation in 13% of 60 nurses and in 24% of 58 nurses who had a nightshift 4-8 times per month. In our country, Uysal et al. (11) conducted a study with 284 students from the high school of nursing and reported that 56.7% were considered as constipated, and 87.7% had at least two of the Rome II criteria. It was stated in the same study that exercise and smoking habits did not affect the frequency of constipation. In another study, it was emphasized that one-sixth of the individuals who quit smoking became constipated (12). We did not detect any correlation between smoking and constipation. In addition, we determined that nightshift was not playing any role in constipation. The percentage of the individuals who complained of constipation was 36.5% among nightshift and 29.4% among dayshift personnel. Although the rate of constipation was higher among the nightshift personnel than the dayshift personnel, the difference was not statistically significant. Although it had been reported in some pre-

vious studies that lack of sleep increased the rate of complaints of constipation, we obtained completely contradictory results. These findings indicated that constipation was a widespread complaint among the health care workers of our hospital.

A request for the fulfillment of a survey form is usually refused by workers of a hospital, who have a busy schedule and work under pressure, as they consider this request as an extra workload. In our study, to encourage the participation, we prepared a one-sheet questionnaire, and the briefing was done personally by the specialist physician who conducted the study. The workers of the surgical departments refused to participate in the survey due to their workload. Therefore, we conducted our survey only with workers of the internal branches.

Constipation is more common in females than in males (13). The rate of the pelvic floor dysfunction, which can be seen in all ages, increases with age and paves the way for constipation (14). Constipation may emerge as a result of the inhibition of the motilin secretion due to an increase in the progesterone level particularly during pregnancy, and an increase in the renal and intestinal absorption of the water and sodium caused by the aldosterone, activated by the renin-angiotensin system, which is again induced by estrogen and progesterone (15). In our study, 68.2% of the participants were females. The majority of the participants with constipation were females, and more than a half were married.

The mean defecation time was 10 minutes in participants with constipation and 3 minutes in participants without constipation. The toilets for patients/relatives and health care workers are usually separated in hospitals. The toilets for health care personnel are generally cleaner than the toilets for general use, and thus the health care personnel is more comfortable. However, they are usually in a hurry due to time pressure. This condition is a factor that aggravates the development of constipation if the individual has a predisposition to constipation.

Following a usual examination, physicians prescribe a laxative to patients who complain of constipation and also schedule control visits. As laxatives have side effects like abdominal cramps and disturbances, patients' compliance with the treatment is rather low. In a study involving different countries, the rate of the laxative usage was 16% in South Korea and 40% in the United States among the adults with constipation (16). In our study, one-fourth of the participants with constipation stated that they were using laxatives. A total of 12.5% of the participants preferred to use stool-softening herbal teas instead of drugs. A large majority (62.5%) of the participants with constipation used neither medication nor herbal supplements. For a population working in the health sector, this rate was considered as too much. The reason for this finding might be the avoidance of an anorectal examination and of visiting a physician and fear of laxative addiction.

In defecation disorders, anorectal structural problems such as fissures, fistulas, and hemorrhoids may emerge due to the stress in the rectum (17). In a study, it was determined that hemorrhoids are the most common anal lesions in individuals with constipation (18). In our study, most common anorectal lesions in individuals were hemorrhoids and anal fissures, respectively. More than a half of the individuals with constipation stated that they had an anorectal

lesion. Even constipation alone is a condition impairing the individual's working performance. A concomitant anorectal lesion will significantly increase the stress of the individual.

Regarding the predisposing factors in functional bowel disorders, the family history is of critical importance. Genetics and the learned behaviors within the family accelerate the development of functional constipation. Chan et al. (19) suggested that constipation emerged at earlier ages in individuals with a positive family history, and the duration of constipation was relatively longer in these individuals. In our study, 23.6% of the participants with constipation had a positive family history with respect to bowel disorders, and the same rate was only 6.2% in the participants without constipation.

## CONCLUSION

We had shown in this study that one-third of the health care workers at the university hospital had functional constipation. Furthermore, we observed that the usage of laxatives was low even among the health care workers. It is obvious that suffering from such a treatable disorder will impair the work performance in an intensive working environment. A training related to constipation may decrease the frequency of this problem among health care workers. We believe that working with personnel who do not have constipation problems will increase productivity at work.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the Ethics Committee Firat University (22.12.2015/22/09).

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Conceived and designed the experiments or case: DA, YD. Performed the experiments or case: DA. Analyzed the data: DA, YD. Wrote the paper: DA. All authors have read and approved the final manuscript.

**Conflict of Interest:** The authors have no conflicts of interest to declare.

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