ESTIMA
Brazilian Journal of Enterostomal Therapy

ORIGINAL ARTICLE
https://doi.org/10.30886/estima.v21.1340_IN

DIRECT COST OF TECHNOLOGIES FOR MANAGEMENT OF DEFINITIVE COLOSTOMY IN A SPECIALIZED SERVICE

Claudiomiro da Silva Alonso[1,*], Eline Lima Borges[1], André Monteiro Lima Ruas[1], Taysa de Fatima Garcia[1]

ABSTRACT

Objectives: To identify the direct cost of a specialized service with the use of collection equipment and adjuvants and to compare it with the simulated cost of intestinal self-irrigation in people with permanent colostomy. **Method:** Descriptive-exploratory study conducted through a quantitative approach in the form of multiple-case studies. The convenience sample consisted of 22 participants registered in a specialized service in the north of Minas Gerais, Brazil. Data collection was carried out in medical records from January 2019 to January 2020. **Results:** Among the participants, 59.1% had complications related to the ostomy and peristomal skin. Regarding collector/adjuvant equipment, the cost ranged from R$ 2,340.00 to R$ 5,535.00, average cost of R$ 4,050.01, and sample standard deviation of R$ 770.31. The average direct cost with colostomy self-irrigation was R$ 3,793.44. **Conclusion:** The average direct cost of collection/adjuvant equipment was higher than that of colostomy self-irrigation, impacted by the presence of complications and the value of the colostomy protector.

DESCRIPTORS: Colostomy. Health care costs. Ostomy. Therapeutic irrigation. Enterostomal therapy.

CUSTO DIRETO COM TECNOLOGIAS PARA MANEJO DA COLOSTOMIA DEFINITIVA EM UM SERVIÇO ESPECIALIZADO

RESUMO

Objetivos: Identificar o custo direto de um serviço especializado com o uso de equipamentos coletores e adjuvantes e compará-lo com o custo simulado da autoirrigação intestinal em pessoas com colostomia definitiva. **Método:** Estudo descritivo-exploratório conduzido por meio da abordagem quantitativa nos moldes de estudo de casos múltiplos. A amostra por conveniência foi composta de 22 participantes cadastrados em um serviço especializado do norte de Minas Gerais. A coleta de dados foi realizada em prontuários do período de janeiro de 2019 a janeiro de 2020. **Resultados:** Dos participantes, 59,1% apresentaram complicações relacionadas à estomia e pele periestomia. Em relação aos equipamentos coletores/adjuvantes, o custo variou de 2.340,00 a R$ 5.535,00, custo médio de R$ 4.050,01 e desvio padrão amostral de R$ 770,31. O custo direto médio com autoirrigação de colostomia foi de R$ 3.793,44. **Conclusão:** O custo direto médio dos equipamentos coletores/adjuvantes foi superior ao da autoirrigação de colostomia, impactado pela presença de complicações e pelo valor do protetor de colostomia.

DESCRITORES: Colostomia. Custos de cuidados de saúde. Estomia. Irrigação terapêutica. Estomaterapia.

1. Universidade Federal de Minas Gerais – Belo Horizonte (MG), Brazil.
* Correspondence author: claudiomiro.alonso2015@hotmail.com
Section Editor: Juliano Teixeira Moraes
Received: Nov. 22, 2022 | Accepted: Mar. 14, 2023
How to cite: Alonso CS; Borges EL; Ruas AML; Garcia TF (2023) Direct cost of technologies for management of definitive colostomy in a specialized service. ESTIMA, Braz. J. Enterostomal Ther., 21: e1340. https://doi.org/10.30886/estima.v21.1340_IN

CC BY

COSTO DIRECTO DE TECNOLOGÍAS PARA EL MANEJO DE LA COLOSTOMÍA DEFINITIVA EN UN SERVICIO ESPECIALIZADO

RESUMEN

Objetivos: Identificar el costo directo de un servicio especializado con el uso de equipo de recolección y coadyuvantes y compararlo con el costo simulado de la auto irrigación intestinal en personas con colostomía permanente. **Método:** Estudio descriptivo-exploratorio, realizado a través de un enfoque cuantitativo en forma de estudio de casos múltiples. La muestra de conveniencia estuvo compuesta por 22 participantes registrados en un Servicio Especializado del Norte de Minas Gerais. La recolección de datos se realizó en las historias clínicas de enero de 2019 a enero de 2020. **Resultados:** De los participantes, el 59,1% presentó complicaciones relacionadas con la ostomía y la piel periestomal. En cuanto a los equipos colectores/adyuvantes, el costo varió de R$ 2.340,00 a R$ 5.535,00, costo promedio R$ 4.050,01 y desviación estándar de la muestra R$ 770,31. El costo directo promedio con autoirrigación de colostomía fue de R$ 3.793,44. **Conclusión:** El costo directo promedio del equipo de recolección/adyuvante fue superior al de la autoirrigación de la colostomía, impactado por la presencia de complicaciones y el valor del protector de colostomía.

DESCRIPTORES: Colostomía. Costos de la atención em salud. Estomía. Irrigación terapéutica; Estomaterapia.

INTRODUCTION

The trajectory of more than 30 years of the Brazilian Unified Health System (*Sistema Único de Saúde-SUS*) has been marked by changes in the health care of its users[1,2]. Regarding its doctrinal principles, it established priorities in expanding access and incorporation of technologies[3].

In contrast, public spending increased, and economic crises became recurrent, naturalizing the claim of the unsustainability of the SUS[4]. Another relevant fact was the implementation of austerity measures that promoted the stagnation of expenses for 20 years in public health, starting in 2016[5]. Concomitantly, non-communicable chronic diseases assumed a prominent position, mainly because they consume a significant portion of public health resources since the high incidence, lethality, promotion of disabilities, and impact on quality of life[6] convene their magnitude.

In this sense, people affected by diseases that require surgeries that lead to the creation of an elimination ostomy, especially the intestinal ones (ileostomy and colostomy), face changes in the anatomical configuration and the daily habits of life. The elimination of flatus and feces happens through an abnormal and uncontrolled orifice, characterizing a traumatic process requiring some technology to care for the ostomy[7].

Ordinance No. 400/2009, which deals with the National Guidelines for the Health Care of Ostomates within the scope of the SUS[8], was one of the most recent milestones for the acquisition of rights by people with stomas. In its content, in addition to defining criteria for the organization of the care process, it also established the duty of health services to provide collection and adjuvant equipment free of charge[8,9].

Care services for people with an ostomy (*Serviços de Atenção às Pessoas Ostomizadas-SASPO*) are the protagonist in promoting the health of people with an ostomy, and they vivify assumptions of public policies for this clientele. They aim to provide specialized assistance, of an interdisciplinary nature, to people with a stoma, caregivers and/or family members, aiming at their rehabilitation, with an emphasis on guidance for self-care and the prevention of complications in the stoma. In addition, they guarantee access to collector and adjuvant equipment[8,9].

Traditionally, SASPO has offered collection equipment for people to manage ileostomy and colostomy. Adjuvants are generally available to control or treat ostomy and peristomal skin complications. For people with terminal, definitive and left colon colostomies, there is the possibility of ceasing to use the collection equipment[7,10] when irrigation through the ostomy is performed; however, the persistence of indication of collection equipment is based on the belief that such resources are more economical.

Performing colostomy irrigation to control intestinal elimination is a non-invasive method and little indicated in clinical practice[11,12]. It consists of a mechanical procedure of introducing a specific volume of water into the colon at regular intervals, stimulating mass peristalsis and promoting emptying fecal content[7,13].

Despite the theme's relevance, no studies compared the cost of technologies for care with the permanent colostomy on the left. In this way, decision-making has been based on the traditional perspective, with the supply of collection equipment and adjuvants, even after incorporating intestinal irrigation as a health technology in the SUS.

A pioneering Brazilian study described the costs of people with intestinal stomas and ratified higher costs in people with a temporary colostomy, presence of complications and low socioeconomic levels[14]; however, none of the studies available in the literature considered or detailed the impact of irrigation on reducing costs for the SUS.

Thus, the scarcity of public resources in health has encouraged countries to conduct research and share results and experiences on cost analysis of health technologies. In Brazil, due to the SUS' capillarity, the results of cost studies ensure that the budget allocation occurs in a sustainable, transparent way that favors the incorporation of the best technologies in public services[15].

When considering these facts, the following research question arose: what is the cost of a specialized service with technologies for managing the definitive colostomy? In addition, the objective was to identify the direct cost of a specialized service with the use of collectors and adjuvant equipment and compare it with the simulated cost of intestinal self-irrigation in people with a permanent colostomy.

METHOD

The present is a descriptive-exploratory study conducted through a quantitative approach using multiple case studies. The study was conducted in a type II SASPO (SASPO II) located in a Type IV Specialized Rehabilitation Center in a municipality in the northern region of Minas Gerais, Brazil.

SASPO focuses on the care and rehabilitation of people with stomas. In this service, admission consultations are carried out, with guidance on self-care, prevention of complications in the ostomy and peristomal skin, the definition of the best technologies for managing the ostomy and supply of collection and adjuvant equipment. It also carries out follow-up consultations, generally every 90 days, to assess compliance with the goals of the therapeutic plan and reassess the adaptation and effectiveness of the material resources offered. The service had a general surgeon, a generalist nurse, a social worker, a psychologist and a nutritionist. During the data collection period, only one patient underwent colostomy irrigation. This scenario was chosen due to the regional representativeness of the service, the ease of access to data and the organization of costs with ostomy technologies.

The study population consisted of SUS users with a definitive terminal colostomy performed in the left colon (descending or sigmoid colon), with registration in force in 2019 at the specialized service where the study was developed.

Participants with a definitive left terminal colostomy, aged over 18 years, who used collection equipment with clinical indication to perform self-irrigation of the colostomy were included. People with intestinal ostomies made in the ileum, right or transverse colon were excluded, as they do not indicate performing irrigation, and those with no record in the medical history of three or more variables of interest to this study.

Considering the reference population (n = 126) and the eligibility criteria, the convenience sample consisted of 22 participants who represented all possible cases for colostomy irrigation. The perspective adopted in the study was that of the SUS as a provider of public health services in Brazil.

For data collection, the period from January 2019 to January 2020 was defined as the time horizon. This time interval allowed the analysis of the costs arising from the assistance to the person with a colostomy, recognizing pragmatism, such as clinical variations of the patient, complications of the ostomy and adverse situations, in addition to limitations of public services, such as the dynamics of equipment and adjuvant prices.

Also, the medical records of the participants were consulted in search of information about the variables: age; gender (female, male); reason for making the colostomy; location (descending colon, sigmoid); time living with the ostomy (in

years); ostomy-related complications such as protrusion (flat, retraction and prolapse) and pseudo wart lesion (yes, no); complications around the ostomy (dermatitis, peristomal hernia); related to equipment and adjuvants: type of collector equipment; type of adjuvant used; monthly consumption of collector equipment; monthly consumption of adjuvants; half-yearly consumption of intestinal irrigation kit; and half-yearly consumption of the colostomy protector.

In addition, were consulted the commitment notes of the Minas Gerais State Health Department (*Secretaria Estadual de Saúde de Minas Gerais/SES-MG*), the agency responsible for the purchase of these inputs, referring to the same period from January 2019 to January 2020. The notes show the resources committed to purchasing materials for ostomies and the aggregate cost of each material.

The cost valuation method was based on the bottom-up micro-costing approach. Micro-costing is considered the gold standard for economic evaluations in health, given that collecting individual data enables the highest level of precision in estimating costs. This method seeks to assess costs as accurately as possible. In studies, all cost components are defined at the most detailed level16.

The cost of each participant in the sample was calculated in two stages. In moment 1, we considered the use of collection and adjuvant equipment based on the clinical data of the colostomy, respecting the mean attendance of one medical consultation and three nursing consultations in one year evaluated. At the moment 2, the cost related to colostomy irrigation was estimated, taking into account the consumption of the intestinal irrigation kit and the colostomy protector (minicap) according to the SES-MG standard, with one appointment being accepted as the average number of medical visits and four nursing visits in the same period of one year evaluated.

Direct cost components were defined as all collection and auxiliary equipment used by patients in the sample, in addition to medical and nursing consultations. Over time, the invariability in the price of the abovementioned products and services is justified because the bidding process is annual. Prices were represented by the average cost since there was no fluctuation (Table 1).

Table 1. Objective description of cost components, Belo Horizonte, MG, Brasil, 2020.

Cost component (SIAD code)	Average cost (BRL)
Strip resin (1555030)	3.88
Adult belt (1245988)	12
Skin protectant spray (1554972)	31.66
Intestinal pouch† 19–64 mm opaque closed with filter (440043)	7.50
Intestinal pouch† 15–55 mm opaque closed with filter (440019)	6.99
Intestinal pouch† 10–76 mm opaque closed with filter (440302)	10.25
Intestinal pouch† 10–70 mm drainable opaque with filter (785598)	8.25
Intestinal pouch† 10–76 mm drainable opaque with filter (440353)	10.65
Intestinal pouch† 19–64 mm drainable opaque with filter (1554824)	9.75
Intestinal pouch£ 50 mm flexible flat plate (1245007)	35.48
Intestinal pouch£ 60 mm flexible flat plate (1245015)	30
Intestinal pouch£ 57 mm flexible flat plate (1245546)	31.43
Intestinal pouch£ 70 mm flexible flat plate (1245554)	31.38
Intestinal pouch£ 70 mm flexible flat plate (1245058)	29.95
Intestinal pouch£ 44 mm convex plate (1245635)	36.51
Intestinal pouch£ 50 mm flexible convex plate (1554859)	35.48
Intestinal pouch£ 57 mm convex plate filter (1245643)	36.64
Intestinal irrigation system kit for colostomies (344516)	315
Irrigation hose (513520)	31.66
Colostomy protector (mini cap)(1245961)	8.32

SIAD: *Sistema Integrado de Administração de Materiais e Serviços* (Integrated Materials and Services Management System)
†One piece, cuttable, closed or drainable, opaque with filter; £two-piece, drainable, with filter. Source: CSIA and CASPD joint technical note No. 003/2016, from the Minas Gerais State Health Department[15].

To achieve the proposed objective was necessary to establish the intervening variables in the direct cost of each intervention and the relationship between these variables. The average cost of each collection device, adjuvant and equipment was obtained by calculating each product's maximum and minimum prices.

The average direct cost with the use of collection and adjuvant equipment (CDme) in the SASPO was obtained by the sum of the average individual costs (CI) divided by the number of cases (Q) in this study, according to Eq. 1:

$$[CDme = CI/Q] \quad (1)$$

The direct cost (DC) of the equipment used in the colostomy self-irrigation procedure was obtained by the sum (Σ) of the average costs of each of the materials (Cmek)applied to the irrigation procedure, as represented by Eq.2:

$$[CD = \Sigma\, Cm^{K}] \quad (2)^{17}$$

The numerical variables of interest in this study were entered into electronic spreadsheets in the Microsoft Excel 2019 software through independent double typing and analyzed descriptively, presenting the minimum, average and maximum values, range of average annual cost, standard deviation and variance.

The monetary unit chosen was the Real, but in the presentation of cost differences, the commercial US dollar was also used as a complementary monetary unit for better dissemination of the study results, having as an equivalence: BRL 1 = US$ 0.18, according to the conversion of the Central Bank of Brazil, by the time of closing the data for analysis.

The research was authorized by the study scenario manager and approved by the Federal University of Minas Gerais Research Ethics Committee, with the Certificate of Presentation of Ethical Appreciation 23459919.2.0000.5149 and opinion number 3.691.407. The principles of bioethics and all the norms of Resolution nº 466/12 of the National Health Council were respected.

RESULTS

The 22 participants used collection equipment and adjuvants in colostomy care and were qualified to perform the intestinal self-irrigation procedure. The mean age was 49, with a minimum of 36 and a maximum of 64. Thirteen (59.1%) were female, and nine (40.9%) were male.

The causes for making the colostomy were colorectal cancer (19/86.4%), sigmoid volvulus (1/4.5%), abdominal trauma (1/4.5%) and endometriosis (1/4.5%). In 18 (81.8%) participants, the colostomy was performed in the sigmoid colon and four (18.2%) in the descending colon. The participants had the colostomy for less than five years (6/27.3%), between five and ten years (9/40.9%) and more than ten years (7/31.8%). Regarding complications, 59.1% (13) had some complications in the ostomy or surrounding skin: retraction, pseudo wart lesion, dermatitis and parastomal hernia.

Participants who used collection and adjuvant equipment in colostomy care had their costs identified and measured over one year, as described in Table 2. Thus, the average annual cost is BRL 4,050.01 (≅US$ 805,81).

The minimum cost was BRL 2,340 (≅US$432.07), and the maximum cost was BRL 5,535 (≅US$1022.01), whose range was BRL 3,195 (≅US$589.94). The average cost was BRL 4,050.01 (≅US$747.81), with a sample standard deviation of BRL 770.31 (≅US$142.23).

According to current equipment values in the researched time horizon, the direct cost with patients who use colostomy irrigation as a method of bowel control was BRL 3,793.44 (≅US$ 700.44) (Table 3).

Table 2. Description of the cost per participant, Belo Horizonte, MG, Brasil, 2020.

Participant	Product	Amount	Total cost (BRL)	Annual cost (BRL)
1	Intestinal pouch[£] 50 mm	120	4,257.60	4,305.60
	Adult belt	4	48	
2	Intestinal pouch[†] 10–76 mm	240	2,556	2,935.92
	Protetor cutâneo spray	12	379.92	
3	Intestinal pouch[†] 10–76 mm	540	5,535	5,535
4	Intestinal pouch[£] 70 mm	120	3,765.60	3,813.60
	Adult belt	4	48	
5	Intestinal pouch[£] 50 mm	120	4,257.60	4,305.60
	Adult belt	4	48	
6	Intestinal pouch[£] 70 mm	120	3,594	3,642
	Adult belt	4	48	
7	Intestinal pouch[†] 19–64 mm	540	4,050	4,050
8	Intestinal pouch[£] 57 mm	120	3,771.60	3,819.60
	Adult belt	4	48	
9	Intestinal pouch[†] 15–55 mm	540	3,774.60	3,774.60
10	Intestinal pouch[†] 10–76 mm	540	5,535	5,535
11	Intestinal pouch[†] 19–64 mm	540	4,050	4,050
12	Intestinal pouch[£] 60 mm	120	3,600	3,648
	Adult belt	4	48	
13	Intestinal pouch[†] 15–55 mm	540	3,774.60	3,774.60
14	Intestinal pouch[†] 10–76 mm	540	5.535	5,535
15	Intestinal pouch[£] 57 mm	120	3,771.60	3,819.60
	Adult belt	4	48	
16	Intestinal pouch[†] 10–70 mm	30	942.90	4,136.10
	Intestinal pouch[£] 50 mm	90	3,193.20	
17	Intestinal pouch[£] 60 mm	120	3,600	3744
	Adult belt	12	144	
18	Intestinal pouch[£] 70 mm	120	3,5940	3,642
	Adult belt	4	48	
19	Intestinal pouch[£] 44 mm	120	4,381.20	4,894.80
	Adult belt	4	48	
	Stripe resin	120	465.60	
20	Intestinal pouch[†] 19–64 mm	240	2,340	2.340
21	Intestinal pouch[£] 57 mm	120	4,396.80	4,444.80
	Adult belt	4	48	
22	Intestinal pouch[†]19–64 mm	540	4,050	4.050

[†]One-piece, cut-out, closed, opaque with filter; [£]two-piece, drainable, with strainer, flat or convex flex plate.

Table 3. Simulated cost of colostomy self-irrigation. Belo Horizonte, MG, Brasil, 2020.

Item	Annual amount	Unit cost (BRL)	Annual cost (BRL)
Intestinal irrigation system kit	2	315	630
Irrigation hose	4	31.66	126.64
Colostomy protector (minicap)	365	8,32	3,036.80
Total annual cost (BRL)	**3,793.44**	**1 (9.1)**	**54.5**

Fonte: nota técnica conjunta CSIA e CASPD nº 003/2016 da Secretaria de Estado da Saúde de Minas Gerais[17].

A baseline is presented by comparing the average annual direct cost of people using collector and adjuvant equipment with the simulated cost of self-irrigation. This fact is related to the intestinal irrigation procedure, which is invariable because it is an estimated cost (Fig. 1).

Furthermore, there was a predominance of positive deflection concerning the group of people who use collection and adjuvant equipment, characterizing values higher than the cost of intestinal self-irrigation in the sample.

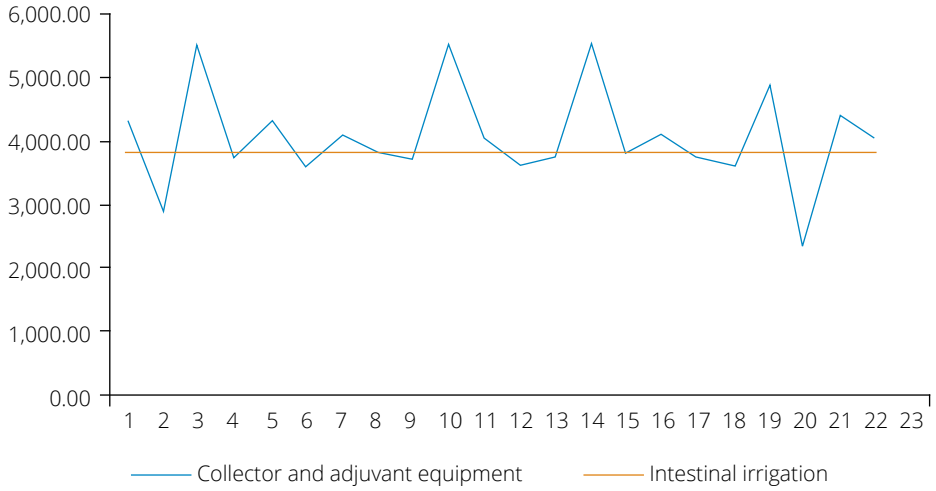

Figure 1. Comparison between the costs of technologies for colostomy management.Belo Horizonte, MG, Brasil, 2020.

DISCUSSION

This research addresses the cost of technologies for treating intestinal elimination stomas already incorporated into the SUS18.In this study, the average annual direct cost of people who used collection and adjuvant equipment in colostomy care was lower than the simulated cost of intestinal irrigation in the sample, which would produce a difference of BRL 256.57 (≅US$ 47.37). In some cases, depending on the type of collection equipment and adjuvants used, this difference can be as much as BRL 1,706.64 (≅US$ 315.12).

In this conception, it is understood that colostomy irrigation is still underused or started late, based on considerations about ostomy healing and pain associated with irrigation during the postoperative phase and acceptance of the person's condition[13]. Furthermore, the non-indication of irrigation is shown to be related to the conviction that the procedure has a higher cost when compared to the use of collection equipment and adjuvants[13]. The results of this study demystified this conception since the average annual cost of irrigation was lower than the average yearly cost with collector equipment and adjuvants.

The non-indication or adherence to colostomy irrigation is a frequent phenomenon in health services, a fact signaled by studies that described low rates of performing the procedure in eligible patients[11,12].

Despite this, in the study setting, only one patient with a left colostomy underwent irrigation. In the medical records, there were no reports of other indications for the use of irrigation, nor cases of refusal, much fewer factors that motivated the non-indication of self-irrigation of the colostomy.

The adjuvants and the collection equipment stood out in a detailed analysis of the costs identified in this study. These last inputs aim to help treat stoma and peristomal skin complications. For some patients, these items enable them to manage their ostomy independently and without fear of leakage[19].

Thus, it is confirmed that to reduce the costs of collecting and adjuvant equipment, it is necessary to initially prevent complications, as this preserves the patient's autonomy in choosing the best technologies for care. The absence of complications reduces the possibility of recurrent exchange of collection equipment and the use of adjuvants, which significantly impacts the cost[20].

Some complications were identified that could be prevented through colostomy irrigation, such as dermatitis. It is known that complications related to the ostomy and peristomal skin, such as dermatitis, hernia, prolapse, and episodes of diarrhea with effluent leakage through the collection equipment, may be linked to higher costs, especially when some of these situations require two-piece collection equipment, with cut-out plate and adjuvants such as protective barrier and belt[21].

In the study, the results indicate a lower cost of intestinal irrigation. The benefits resulting from colostomy irrigation are known, including the control of intestinal elimination, the abolition of the use of the collection bag, the recovery of self-esteem and a better quality of life[7,22].

The indication for the irrigation method is medical, and training is the responsibility of the stoma care nurse[7,10,22]. Irrigation should be recommended for people with end colostomy, descending or sigmoid colon, with skills, physical and mental ability to perform it. There are absolute contraindications, such as having irritable bowel syndrome and relative contraindications associated with an ostomy (prolapse, retraction, stenosis), surrounding skin (hernia) and inadequate sanitary facilities in the home[7,18,23].

Colostomy irrigation reduces the frequency of intestinal eliminations compared to spontaneous elimination without irrigation induction. It often results in no bowel movements for 24 hours or more, allowing some patients to discontinue continued use of the collecting device. Regular irrigation is associated with the replacement of the collection bag by the colostomy protector (minicap)[13,18].

Despite the lower cost of the colostomy irrigation method compared to the use of collection equipment, this does not mean that it is low-cost but relatively low.

In this study, participants performing daily irrigation would also use the colostomy protector (minicap) with daily change. The unit cost of the product was BRL 8.32 higher than the value of the lowest cost collection equipment (BRL 6.99), represented by the one-piece, cuttable, closed, opaque intestinal bag with filter, and is also changed daily. Such collection equipment is often used by people with a left colon colostomy who have up to two daily bowel movements.

Considering the annual cost of the inputs needed to carry out the irrigation, it was found that, of the total BRL 3,793.44, the colostomy protector was responsible for the value of BRL 3,036.80, and the intestinal irrigation system kit for colostomy, for BRL 630. Therefore, the colostomy protector stands out for its significant value compared to other products. It is important to note that this product has low technological complexity compared to other equipment of similar value.

The analysis of these values allows us to state that the cost of the colostomy protector is disproportionate, making it possible to discuss alternatives to reduce its production cost and consequent savings for the SUS. This statement is based on the existence of another method to control intestinal elimination for people with a left, terminal and permanent colostomy, which consists of using an occluder. This product is a type of tampon used to occlude the colostomy at its distal end, making it possible to control incontinence[18,24].

The occluder can replace the colostomy protector (minicap)[18,24]. However, no evidence exists that the product brings additional benefits when associated with colostomy irrigation. The results established in this study make it possible to state that the costs are higher since the occluder is more expensive (BRL 24.60) than the colostomy protector (BRL 8.32).

At the national level, health care for people with an ostomy and its costs is still discreet. Many services are still being structured, even after Ordinance nº 400/2009 came into force[8,25]. However, in the international scenario, there is an overt concern with the increase in costs with the prescription of collectors and adjuvant equipment, which produces the rogatory performance of nurses who care for people with an ostomy to monitor, manage and justify the use of the product[19].

Thus, it is understood that one of the biggest challenges for the SUS is implementing solutions with a significant functional impact associated with a low operating cost, which can contribute to facilitating access to health care and its

quality[3].In this sense, using irrigation by people with definitive colostomy of the descending or sigmoid colon can add cost savings for the SUS and quality of life for this clientele.

CONCLUSION

The study reinforces the need to encourage clinical practice to indicate and perform irrigation as a method of elimination control. The average direct cost of collection/adjuvant equipment was higher than that of colostomy self-irrigation. The first was impacted by complications in the ostomy and skin and the second by the value of the colostomy protector (minicap).

The study has implications for clinical and managerial practice. Collection equipment and adjuvants are traditionally used in colostomy care. Irrigation has yet to be indicated because of the belief that it has a higher cost. In addition to the already proven benefits, it is cheaper than the regular use of collection and adjuvant equipment for people with a colostomy. It can generate a significant economic impact if its application is expanded in the clinical practice of specialized services, such as SASPO, in Brazil.

Furthermore, the study provides subsidies to substantiate the discussion with the manufacturing companies about the possibility of reducing the cost of production and/or commercialization of the ostomy protector (minicap). The value of this input impacted the cost of irrigation, and consequently, its reduction by manufacturers will result in savings for the SUS.

Among the study's limitations, we mention using the simulated cost to the detriment of the actual cost with colostomy irrigation. This decision is justified because, in health services in Brazil, it is not usual for people with a colostomy to use irrigation. However, it was verified that the SASPO follows the guidelines of the SES-MG for defining the amount of equipment necessary for the performance of colostomy self-irrigation, which makes the cost invariable.

In addition, due to the study design and the small sample size, the results demonstrate limitations regarding external validity, which requires moderation in the generalization of the presented results, that we recommend being confronted in the future with studies with larger samples and more heterogeneity in data collection scenarios that make up the care network for ostomates, also aiming to identify the intervening factors, in the conception of professionals and patients, for the effectiveness of colostomy irrigation in clinical practice.

AUTHORS' CONTRIBUTION

Formal Analysis: Alonso CS; Garcia TF and Ruas AML; **Conceptualization:** Alonso CS and Borges EL; **Data Cure:** Alonso CS and Garcia TF; **Methodology:** Alonso CS and Ruas AML; **Writing - First Version:** Alonso CS and Ruas AML; **Writing - Review and Editing:** Alonso CS; Garcia TF and Borges EL; **Supervision:** Borges EL; **Validation:** Alonso CS; Garcia TF and Borges EL; **Preview:** Alonso CS; Garcia TF; Ruas AML and Borges EL.

DATA AVAILABILITY STATEMENT

Data may be made available upon request from the corresponding author.

FUNDING

Not applicable.

ACKNOWLEDGEMENTS

We want to thank the Coordination of Health Care for Persons with Disabilities in the State of Minas Gerais for their partnership and role in the Care Network for People with Stomas.

REFERENCES

1. Viacava F, Oliveira RAD, Carvalho CC, Laguardia J, Bellido JG. SUS: supply, access to and use of health services over the last 30 years. Ciênc Saúde Coletiva 2018;23(6):1751-62. https://doi.org/10.1590/1413-81232018236.06022018
2. Kruger TR, Oliveira A. Tendências da participação no SUS: a ênfase na instrumentalidade e na interface interestatal. Saúde Debate 2020;43(5):174-89. https://doi.org/10.1590/0103-11042019S515
3. Silva HP, Elias FTS. Incorporação de tecnologias nos sistemas de saúde do Canadá e do Brasil: perspectivas para avanços nos processos de avaliação. Cad Saúde Pública 2019;35(Supl. 2):e00071518. https://doi.org/10.1590/0102-311X00071518
4. Saldiva PHN, Veras M. Gastos públicos com saúde: breve histórico, situação atual e perspectivas futuras. Estud Av 2017;32(92):47-61. https://doi.org/10.5935/0103-4014.20180005
5. Menezes APR, Moretti B, Reis AAC. O futuro do SUS: impactos das reformas neoliberais na saúde pública – austeridade versus universalidade. Saúde Debate 2019;43(N. esp. 5):58-70. https://doi.org/10.1590/0103-11042019S505
6. Malta DC, Bernal RTI, Lima MG, Araújo SSC de, Silva MMA da, Freitas MI de F, Barros MBA. Noncommunicable diseases and the use of health services: analysis of the National Health Survey in Brazil. Rev Saúde Pública 2017;51(Supl. 1):4s. https://doi.org/10.1590/S1518-8787.2017051000090
7. Paula MAB, Moraes JT, eds. Consenso Brasileiro de Cuidado às Pessoas Adultas com Estomias de Eliminação 2020 [Internet]. São Paulo: Segmento Farma; 2021 [acessado em 10 out. 2022]. Available at: https://sobest.com.br/wp-content/uploads/2021/11/CONSENSO_BRASILEIRO.pdf
8. Brasil. Ministério da Saúde. Portaria nº 400, de 16 de novembro de 2009. Estabelece Diretrizes Nacionais para a Atenção à Saúde das Pessoas Ostomizadas no âmbito do Sistema Único de Saúde – SUS, a serem observadas em todas as unidades federadas, respeitadas as competências das três esferas de gestão [Internet]. Brasília: Ministério da Saúde; 2009 [acessado em 2 jan. 2022]. Available at: https://bvsms.saude.gov.br/bvs/saudelegis/sas/2009/prt0400_16_11_2009.html
9. Marques ADB, Silva EA, Vidal SAS, Moreira TMM, Cestari VRF, Florêncio RS. Tecendo redes: itinerários terapêuticos de pessoas com estomia. Estima Braz J Enterostomal Ther 2020;18:e2020. https://doi.org/10.30886/estima.v18.909_PT
10. Wound, Ostomy and Continence Nurses Society, Guideline Development Task Force. WOCN Society Clinical Guideline: Management of the Adult Patient with a fecal or urinary ostomy: an executive summary. J Wound Ostomy Continence Nurs 2018;45(1):50-8. https://doi.org/10.1097/WON.0000000000000396
11. Salomé GM, Almeida SA de, Mendes B, Carvalho MRF, Massahud Junior MR. Assessment of subjective well-being and quality of life in patients with intestinal stoma. J Coloproctol 2015;35(3):168-74. https://doi.org/10.1016/j.jcol.2015.03.002
12. Abdelmohsen S. Effectiveness of structured education on patient's knowledge and practice regarding colostomy care. Asia Pac J Oncol Nurs 2020;7(4):370-4. https://doi.org/10.4103/apjon.apjon_240
13. Rosen H. Management of permanent colostomies by colostomy irrigation. Coloproctology 2021;43(11):417-21. https://doi.org/10.1007/s00053-021-00564-y
14. Lira JAC, Bezerra SMG, Oliveira AC, Rocha DM, Silva JS, Nogueira LT. Custos de equipamentos coletores e adjuvantes em pacientes com estomias de eliminação. Rev Min Enferm 2019;23:e1163. https://doi.org/10.5935/1415-2762.20190011
15. Lima SGG, Brito C, Andrade CJC. O processo de incorporação de tecnologias em saúde no Brasil em uma perspectiva internacional. Ciênc Saúde Coletiva 2019;24(5):1709-22. https://doi.org/10.1590/1413-81232018245.17582017
16. Etges AP, Schlatter R, Neyeloff J, Araujo D, Bahia L, Cruz L, Godoy MR, Bittencourt ONS, Rosa PR, Polanczyk CA. Estudos de Microcusteio aplicados a avaliações econômicas em saúde: uma proposta metodológica para o Brasil. J Bras Econ Saúde 2019;11(1):87-95. https://doi.org/10.21115/JBES.v11.n1.p87-95
17. Minas Gerais. Coordenação de Atenção à Saúde da Pessoa com Deficiência. Nota Técnica Conjunta CSIA CASPD nº 3, de 24 de novembro de 2016 [Internet]. Belo Horizonte; 2016 [acessado em 22 jan. 2022]. Available at: https://www.saude.mg.gov.br/images/documentos/Nota%20T%C3%A9cnica%20Conjunta%20CSIA%20CASPD%20n%C2%BA%20003_2016.pdf
18. Ruiz PB de O, Pinheiro G, Lima AFC. Custos diretos dos curativos de úlceras vasculogênicas realizados por uma unidade de tratamento integral de ferida. Cogitare Enferm 2022;27:e82224. https://doi.org/10.5380/ce.v27i0.82224
19. Borges EL, Ribeiro MSR. Linha de cuidados da pessoa estomizada [Internet]. Belo Horizonte: SES-MG; 2015 [acessado em 28 maio 2020]. Available at: https://www.saude.mg.gov.br/cer/story/8453-ses-mg-lanca-linha-de-cuidadosda-pessoa-estomizada
20. Dufton RL. Cutting the prescription costs of stoma accessory products: is this achievable? Gastrointest Nurs 2017;15(1):30-6. https://doi.org/10.12968/gasn.2017.15.1.30
21. Tsujinaka S, Tan KY, Miyakura Y, Fukano R, Oshima M, Konishi F, Rikiyama T. Current management of intestinal stomas and their complications. J Anus Rectum Colon 2020;4(1):25-33. https://doi.org/10.23922/jarc.2019-032

22. Boutry E, Bertrand MM, Ripoche J, Alonso S, Bastide S, Prudhomme M, French Federation of Ostomy. Quality of life in colostomy patients practicing colonic irrigation: an observational study. J Visc Surg 2021;158(1):4-10. https://doi.org/10.1016/j.jviscsurg.2020.07.003

23. Page H. Colostomy irrigation (part 2): contraindications, barriers to uptake, adherence and nurse education. Gastrointest Nurs 2021;19(5):22-7. https://doi.org/10.12968/gasn.2021.19.5.22

24. Hoppe ADS, Paczek RS, Pagliarini AM, Tanaka AKSR, Micheletti VCD, Lana LD. Irrigação de colostomia: impacto na qualidade de vida. Saúde Coletiva 2021;11(69):8286-95. https://doi.org/10.36489/saudecoletiva.2021v11i69p8286-8295

25. Freitas J, Borges E, Bodevan E. Caracterização da clientela e serviço de saúde da pessoa com estomia atenção à eliminação. ESTIMA Braz J Enterostomal Ther 2018;16:e0918. https://doi.org/10.30886/estima.v16.402_PT