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Vaseline gauze for prevention of pressure injuries in people with immunobullous dermatoses

Gaze vaselinada para prevenção de lesões por pressão em pessoas com dermatoses imunobolhosas

Gasa con vaselina para la prevención de lesiones por presión en personas con dermatosis inmunobulosa

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ABSTRACT
Objective: to assess the mobility of clients with immunobullous dermatoses, before and after applying vaseline gauze dressings. **Method**: in this quasi-experimental, interinstitutional study of inpatients with immunobullous dermatoses at a state hospital and a federal hospital in Rio de Janeiro State and an institution in Mato Grosso do Sul (Brazil), patient mobility before, 24 hours after, and one week after applying the dressing was classified using fuzzy logic. The study was approved by the research ethics committee. **Results:** 14 participants, nine with pemphigus vulgaris, two with pemphigus foliaceus, and three with bullous pemphigoid, aged between 27 and 82 years old, and predominantly (11) women. After 24 hours, none of the participants considered their mobility to be poor, seven began to be moderately mobile, and seven were highly mobile, and continued so one week after applying the dressing. **Conclusion**: mobility increased significant in the first 24 hours after applying the dressing. **Descriptors:** Nursing Care; Secondary Prevention; Pemphigus; Skin Diseases; Pressure Ulcer.

RESUMO
Objetivo: avaliar a mobilidade do cliente com dermatose imunobolhosa antes e após aplicação do curativo com gaze vaselinada. **Método**: estudo quase experimental, interinstitucional, com clientes com dermatoses imunobolhosas hospitalizados em um hospital estadual e um hospital federal do Estado do Rio de Janeiro e uma instituição do Mato Grosso do Sul. Utilizou-se a lógica *fuzzy* para classificar a mobilidade dos sujeitos antes, 24 horas após e uma semana após aplicação do curativo. A pesquisa foi aprovada pelo Comitê de Ética em Pesquisa. **Resultados**: Incluídos 14 participantes, sendo nove com pênfigo vulgar, dois com pênfigo foliáceo e três com penfigóide bolhoso, entre 27 e 82 anos, predominando 11 mulheres. Após 24 horas, nenhum participante se considerou com baixa mobilidade, sete passaram a mobilidade média, e sete, alta, o que foi mantido uma semana após aplicação do curativo. **Conclusão**: constatou-se significativo aumento da mobilidade logo nas primeiras 24 horas após aplicação do curativo.
Descritores: Cuidados de Enfermagem; Prevenção Secundária; Pênfigo; Dermatopatias; Lesão por Pressão.

RESUMEN
Objetivo: evaluar la movilidad de clientes con dermatosis inmunobullosa, antes y después de la aplicación de apósitos de gasa con vaselina. **Método:** en este estudio cuasi-experimental, interinstitucional de pacientes hospitalizados con dermatosis inmunobullosa en un hospital estatal y un hospital federal en el estado de Río de Janeiro y una institución en Mato Grosso do Sul (Brazil), la movilidad del paciente antes, 24 horas después y una semana después la aplicación del apósito se clasificó mediante lógica difusa. El estudio fue aprobado por el comité de ética en investigación. **Resultados:** se incluyeron 14 participantes, nueve con pénfigo vulgar, dos con pénfigo foliáceo y tres con penfigoide ampolloso, con edades comprendidas entre 27 y 82 años, y predominantemente mujeres (n=11). Después de 24 horas, ninguno de los participantes consideró que su movilidad fuera pobre, siete comenzaron a ser moderadamente móviles y siete eran altamente móviles, y así continuaron una semana después de la aplicación del apósito. **Conclusión:** la movilidad aumentó significativamente en las primeras 24 horas después de la aplicación del apósitoconsideraba con baja movilidad, siete comenzaron a tener movilidad media y siete, alta, que se mantuvo una semana después de aplicar el apósito. **Conclusión:** hubo un aumento significativo en la movilidad en las primeras 24 horas después de aplicar el apósito.
Descriptores: Cuidados de Enfermería; Prevencíon Secundaria; Pénfigo; Enfermedades de la Piel; Úlcera por Presión.

INTRODUCTION

Immunobullous Dermatoses (IDs) are rare, with chronic evolution, whose manifestation consists in the development of blisters and vesicles on the skin and/or mucosae[1].

Such skin conditions usually originate disseminated and extensive injuries, causing pain and discomfort, making a challenge out of the nursing care due to its complexity and vulnerability to complications[2].

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In this context, it is highlighted that the injuries resulting from IDs can interfere with the individuals' lives in the clinic, social, and emotional spheres. Among the limitations, we highlight mobility reduction, increasing vulnerability to developing other injuries, especially, pressure injuries (PIs), considering simultaneous intrinsic factors such as lack of preexisting skin integrity, epidermis fragility, use of corticoid in high doses, malnutrition, oral cavity lesions, difficulties of mobilization/immobilization, mainly in cases of disseminated injuries which are kept exposed.

Also, as it is a rare disease, existent research studies are usually limited to epidemiologic and technical analyses of drug handling, leaving out other aspects involving care to this specific clientele, especially, in the field of public health policies[3]. Given the precariousness of theoretical references related to nursing care to ID patients[4], and even with significant evidence levels regarding the dressings[5], a protocol of a Vaseline gauze dressing was proposed, in an attempt to improve mobility, promote comfort, and minimize complications, including PIs.

IDs come from the activation of the immune system against parts of the organism itself, in this case, against specific structures of the skin, considered autoantigens located in the intraepidermal or subepidermal regions, and they are essential to the identification of its site for classification of the ID type[1].

Pemphigus are intraepidermal IDs, so bullous injuries are more superficial and sensitive, breaking more easily than those of subepidermal origin. There are different types of pemphigus: common (*Pênfigo Vulgar*, PV), foliaceus (*Pênfigo Foliáceo*, PF), drug-induced, herpetiform, paraneoplastic, and due to immunoglobulin A (IgA), the first two being considered the main ones[1].

Despite the unknown etiology of pemphigus, there are references that the basis of the autoimmune process would be the intercellular adhesion molecules, called cadherins, located in the desmosomes. These act as adhesion plates joining the keratinocytes, being structures visible only by electronic microscopy. For unknown reasons, desmosomes become antigenic, stimulating the production of antibodies, causing the adhesion loss between the keratinocytes, a process called acantholysis[1].

Among the subepidermal IDs that make up the pemphigoid complex is bullous pemphigoid (BP), mucous membrane pemphigoid, gestational pemphigoid, herpetiform dermatitis, linear IgA dermatosis, and acquired bullous epidermolysis[1].

Although the individual with a medical diagnosis of ID may present healthy skin areas, it is highlighted that the entire epidermis is vulnerable. Thus, any pressure on the skin can promote the development of injuries, especially PIs.

A PI is characterized by harms to the skin and/or underlying soft tissue, usually over a bony prominence or related to the use of a medical/other device. This occurs as a result of intense and/or prolonged pressure combined with shearing. Soft tissue tolerance to pressure and shear can also be affected by other factors such as microclimate, nutrition, perfusion, comorbidities and tissue condition[6], a fact that predisposes even more individuals with ID to the development of injuries.

It is highlighted that, although IDs have differences in the location of the acantholysis (intraepidermal or subepidermal), the clinical characteristics, especially in relation to the widespread bullous injuries usually presented by the affected person have an effect on comfort and mobility in a similar way, facilitating the development of PIs.

Thus, the objective was to evaluate the mobility of the patient with immunobullous dermatosis before and after the application of vaseline gauze dressing.

METHOD

A quasi-experimental, inter-institutional study carried out from July 2012 to April 2013 with patients with immunobullous dermatoses hospitalized in a state hospital and in a federal one of the state of Rio de Janeiro, as well as in an institution in Mato Grosso do Sul. The research fields were selected considering the possibility of contemplating institutions that have dermatological wards, located in different Brazilian states, or that have beds specifically to this clientele**.**

The quasi-experimental study was chosen taking into account it deals with rare diseases. Thus, an alternative design was used for a single non-randomized group. As there is no control group, each subject was considered as its own control, evaluated before and after the intervention. The selection of the participants was conducted according to convenience sampling; in it, those who met the following inclusion criteria were included: adults with a definite diagnosis of active ID, hospitalized in the wards of the cited institutions, within the research period, regardless of previous history of hospitalization, gender, age range, and whether they use systemic medication or not. The exclusion criteria were the following: individuals in psychiatric treatment, disoriented in time and space.

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It is important to mention that the participants were evaluated integrally, upon the use of the "Protocol for evaluation of the client with skin conditions", validated by specialists[7] and, through this, the sociodemographic and clinic variables were identified: age, gender, age range, ID type, mucous and skin impairment rate, in addition to the presence or not of the nursing diagnoses of impaired physical mobility and of impaired mobility in bed, and their respective defining characteristics and/or related factors, according to *NANDA-I*[8]. In the cases of clients with PV, the evaluation of the extent of skin and mucosal injuries was performed by a validated instrument, the skin-mucosal impairment rate of common pemphigus (*Índice de Comprometimento Cutâneo-Mucoso do Pênfigo Vulgar*, ICCMPV).[9] The proposed dressing was considered as the independent variable; and the change in the mobility patterns, as the dependent variable.

After evaluation, mobility checks were conducted together with the participants, at the following moments: before (T_0), 24 hours after (T_1), and one week after (T_2) dressing application. The proposals targeted to the participants for mobility evaluation had answers indicated in an ascending chromatic scale, starting with white, followed by yellow, orange, and red tones, corresponding to the fuzzy set support. These sets were handled by Loti Zadeh, a researcher who broke the boundaries of knowledge by the Fuzzy Logic.[10]

To allow for the graphic visualization of the fuzzy linguistic variables ("Low", "Medium", and "High"), the use of trapezoids with their support constituted by the chromatic scale was chosen, as shown in Figure 1. Each participant expressed the perception of their mobility according to the color at the three moments. The increase in the tone meant greater intensity, and its reduction, less intensity. The frequency distribution of the participants regarding mobility at the T_0, T_1, and T_2moments allowed performing a descriptive statistical analysis regarding the linguistic terms (low, medium, and high), with the respective pertinences.

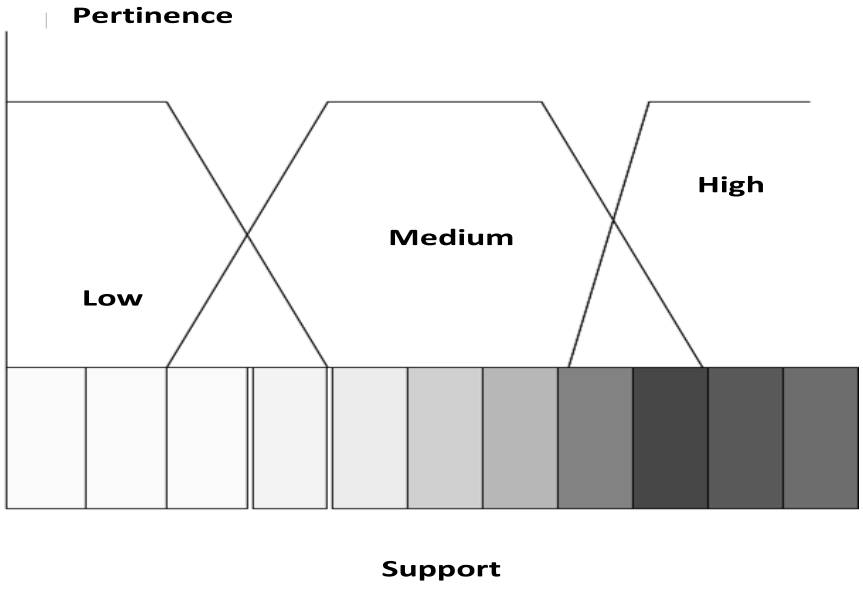

FIGURE 1: Fuzzy sets for mobility evaluation and respective pertinences at the T_0, T_1, and T_2 moments.
Note: Support of the fuzzy sets (chromatic scales) starting with white, followed by yellow, orange, and red tones.

Thus, the pertinence value was obtained by means of the fuzzy sets, fuzzy linguistic variables. Each chromatic scale with the respective markings made by the participants regarding their mobility was superimposed on the chromatic support of the graph. The recognition of patterns was translated according to the classification of the "Low", "Medium", and "High" linguistic terms with respective pertinences at each of the T_0, T_1, and T_2 moments.

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The pertinence values should be understood as an increasing value scale in the range between zero and one[10]. For instance, if two clients are classified with the "Low" linguistic term for mobility, the pertinence attributed to each one of them must be observed, for the one obtaining the lowest degree of pertinence must be considered as in a situation of low mobility.

The application of the vaseline gauze dressing took place right after the evaluation of the participants and checking their mobility at that moment (T_0). It is highlighted that the daily dressings were prepared and done by dermatology-specialist nurses and/or capable of conducting the procedure, especially at the Pemphigus Adventist Hospital/MS. On this regard, it is important to mention that the dressing followed a protocol aiming to standardize its preparation, apart from sterility tests performed at the Laboratory of Clinical Bacteriology (*Laboratório de Bacteriologia Clínica*, LABAC) and at the CONTQUAL – Laboratory of Quality Control of the Pedro Ernesto University Hospital/UERJ, verifying the guarantee of sterilization.

The dressing was prepared with the following materials: 10 cm wide roll gauze, solid vaseline pot, liquid vaseline, stainless steel box with 35x18x07 cm minimum dimensions, label, wrapping larger than the autoclave sterilization box. Stages: cutting 10 strips of gauze roll (35 cm long). Damping each strip with 20 ml of liquid vaseline and then impregnating with 35 g of solid vaseline. Placing two strips at the bottom of the box, side by side, overlapping the others up to a maximum of five on each side, totaling 10 strips. (The recommended gauze height limit of 1/3 in the box makes sterilization possible, and prevents vaseline overflow and contamination). Fully wrapping the box with open roll gauze in the width. Placing an identification label (sector, material specification, date of preparation, and name of the professional. Affixing the gauze and label with adhesive tape. Wrapping the box with the specific wrapping for sterilization in an autoclave. Forwarding to autoclave sterilization.

It is stated that the patent registration of this dressing was acquired through the National Institute of Industrial Property, case number BR 10 2016 024142 1.

The dressing was applied after body hygiene and cleaning the injuries with saline solution heated to 36º in a jet; soft drying only of the regions of intact skin with sterile compress; application of the vaseline gauze dressing on all the injuries using aseptic technique; protection with sterile compress and crepe or tubular mesh bandage, fixing with adhesive tape, without pressing. The dressing should be changed daily after sprinkling bath.

The research project was registered in *Plataforma Brasil* and submitted to evaluation, being approved according to protocol No. 0258.0.228.000-11.

The financial support from the CNPq - Ministry of Science, Technology and Innovation is highlighted, for the study development in the period from 2012 to 2014, through submission to Universal Edict 14/2011-Band B- Process: 477063/2011-0.

RESULTS

A total of 14 individuals participated in the study, 11 of whom had pemphigus (nine common and two foliaceus) and three, PB. The age group was between 27 and 82 years, with predominance of 11 women. Regarding the evaluation of the ICCMPV, among the nine participants with this disease, three presented and index of 60, two, of 80, and four, of 30, 35, 40, and 100, respectively, revealing that six presented quite an expressive index, above 60. The extent of the injuries of the two participants with PF and the three with BP was considered extensive, as they reached the face, torso, and upper and lower limbs, only one participant with BP had bullous injuries on the hands and feet.

Regarding participants' mobility, it is highlighted that, at the T_0 moment, seven indicated low mobility and five, medium mobility, as presented in Figure 2, a fact that reveals the interference of the injuries resulting from the IDs in the mobilization of the client. Thus, during the evaluation of the study participants, it was possible to see their vulnerability to PIs, not only due to previous behavior of skin integrality resulting from the injuries derived from ID but also to the presence of the nursing diagnoses of impaired physical mobility and impaired mobility in bed.

At the T_1 moment, after the first day of dressing application, none of the patients considered themselves with low mobility, as seven started to present medium mobility, and the other seven, high mobility, which was kept at the T_2 moment. It should be made clear that one of the patients was not evaluated at T_2 due to discharge request to continue treatment in a private institution. Thus, it was perceived that the most expressive change in the patient's condition in relation to their mobility occurred in the first 24 hours of intervention.

The personalized evaluation of the patients, presented in Table 1, reveals that, in the transition from the T_0 to the T_1 moment, nine participants considered an increase in mobility and five remained in the same condition, a fact that reveals a positive performance rate of 64.29%. From T_1 to T_2, only three participants of the thirteen evaluated referred to an increase in their mobility, a performance rate of 23.08%. Still, six remained in the same condition, with a 46.15% rate of stagnancy, and

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four considered that there was a reduction from high to medium mobility, with a 30.77% dissatisfaction rate. At the last moment, the total number of subjects dropped to thirteen due to the requested discharge.

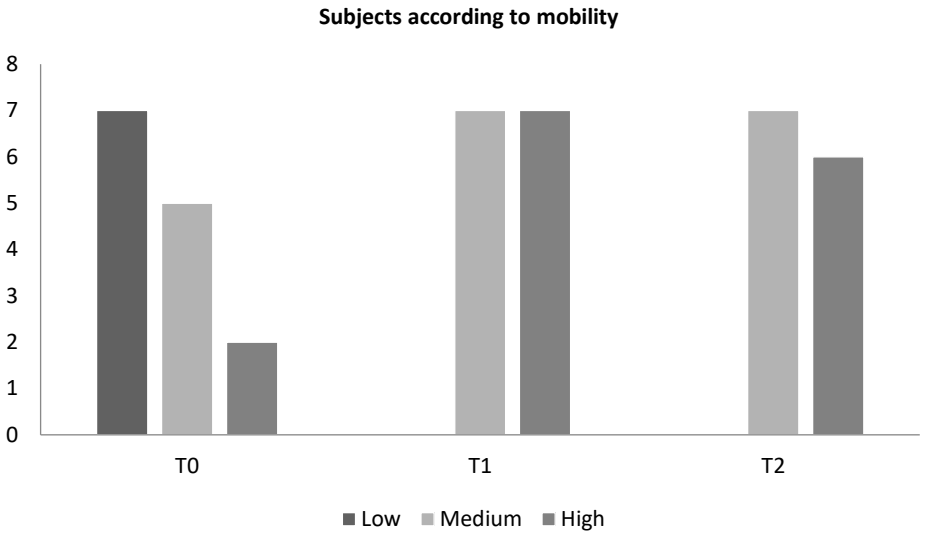

FIGURE 2: Distribution of the subjects according to the linguistic terms regarding mobility at the T0, T1, and T2 moments. Rio de Janeiro, Rio de Janeiro, Brazil. 2013.

TABLE 1: Evolution of the subjects according to the linguistic terms in relation to mobility at the T_0, T_1 and T_2 moments, with respective pertinences. Rio de Janeiro, Rio de Janeiro, Brazil, 2013.

SUBJECTS	T0 Moment		T1 Moment		T2 Moment		EVOLUTION	
	CLASS	PERT	CLASS	PERT	CLASS	PERT	T_0 to T_1	T_1 to T_2
1	Mean	0.70	Mean	1.00	High	0.15	Maintenance	Increase
2	Mean	1.00	High	1.00	High	1.00	Increase	Maintenance
3	Low	1.00	Mean	0.80	Mean	0.25	Increase	Maintenance
4	Low	1.00	High	0.70	Mean	0.25	Increase	Reduction
5	Low	1.00	Mean	1.00	Mean	1.00	Increase	Maintenance
6	Low	1.00	High	0.70	Mean	0.25	Increase	Reduction
7	Mean	0.75	Mean	1.00	-	-	Maintenance	-
8	Mean	1.00	High	0.75	High	0.25	Increase	Maintenance
9	Low	1.00	Mean	1.00	High	0.20	Increase	Increase
10	Low	0.85	High	0.55	Mean	1.00	Increase	Reduction
11	High	0.75	High	1.00	High	0.25	Maintenance	Maintenance
12	Mean	1.00	Mean	1.00	Mean	1.00	Maintenance	Maintenance
13	High	0.70	High	0.70	Mean	1.00	Maintenance	Reduction
14	Low	1.00	Mean	1.00	High	0.00	Increase	Increase

Reference: CLASS: Classification; **PERT**: Pertinence.
Note: Participant number 7 remained hospitalized for four days, a fact the allowed for the evaluation at the T_2 moment. Thus, at T_2, the total was 13 patients.

At T_0, participants 3, 4, 5, 6, 9, 10, and 14 were classified with Low mobility with maximum pertinences for the majority, except participant 10, to whom a 0.85 pertinence degree was attributed. At the T_1 moment, a migration took place to the High classification in subjects 4, 6, and 10, who were checked with 0.70 pertinence for the first two and 0.55 for the other. The rest were categorized in Medium mobility, with 1.00 pertinence, excluding participant 3, with a value of 0.80. At the third measurement, only subjects 9 and 14 migrated to the High class with very low pertinence, 0.2, and zero, respectively.

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Participants 1, 7, and 12 were classified with Medium mobilityat the first migration with pertinence values from 0.70 to 0.1, from 0.75 to 0.1, and retention in 1.0, respectively, which shows an increase in the same categorization. In the second transition, another improvement occurred, since one of them moved to the High classification with 0.15 pertinence.

As demonstrated, participants 11 and 13 were assessed in the High mobility class at the first moment, with pertinence values of 0.75 and 0.70, respectively, the former being maintained in this category with maximum pertinence, but there was a reduction to a value of 0.25. Client 13 finished the evaluation with Medium mobility, having maximum pertinence.

DISCUSSION

Nursing is a profession committed to the production and management of care in different socio-environmental and cultural contexts as an answer to the needs of the individual, the family, and the collective. Among the nursing professionals' duties, the 45th Article from the Ethic Code is highlighted: "To provide nursing care free of harms deriving from inability, neglects or imprudence.[11]" Thus, the nurse and nursing team have their own functions that aim at the quality of care for the hospitalized person, among them, those with a medical diagnosis of ID. It is understood that such functions go beyond the execution of the medical prescriptions, they involve evaluation of the person, definition of the nursing diagnoses, and implementation of care measurements for comfort and prevention of diseases[12,13], such as PIs.

The nursing diagnosis of impaired physical mobility is defined as the limitation of independent and voluntary movement of the body or of one or more extremities.[8] The identification of this diagnosis in the study participants occurred upon the presence of limiting characteristics: discomfort, reductions in the range of movements, difficulty to turn, making slow movements, and factors related to anxiety, pain, and body mass index above the 75% appropriate for the age[14].

The nursing diagnosis of impaired mobility in bed is characterized as movement limitation regardless of a position or other in bed[8], and was identified in view of the defining characteristics: impaired ability of find a position in the bed, of moving, of turning from one side to the other, in addition to the related factors, such as pain[14].

The presence of widespread or localized injuries on the genitalia and/or inner face of the thighs in 12 participants hindered movement, a fact aggravated in the older adults and in those considered overweight. It is recalled that five participants presented an altered Body Mass Index, compatible with obesity in three adults and with overweight in two older adults.

A study demonstrated a higher frequency of PIs in the patients who presented previous skin impairment, and it is observed that skin care is sufficient when the therapeutic priorities overlay the prevention action for such injuries. This fact reveals that the institutions must prioritize the elaboration and implementation of prevention protocols to improve quality of care15.

Thus, upon previously compromised skin integrity by injuries derived from ID, the increased vulnerability to the development of PIs is highlighted, which can be boosted by intrinsic and extrinsic factors. As regards the extrinsic ones, the following stand out: mild pressure, friction or shearing during routine procedures, like decubitus change, sheet change, use of sphygmomanometer, tourniquets, and by touch during transfers and/or walking. The maceration by the use of diapers and an abundant amount of exudate from ID injuries. Among other intrinsic factors, fragility of the epidermis and impaired mobility/immobility stand out, especially when the injuries are kept exposed. The use of corticoids/immunosuppressants is also highlighted, used in high doses for the treatment of ID, a fact that can lead to complications like diabetes. In addition, malnutrition is highlighted, because of the difficulty of ingesting food due to the presence of injuries in the oral mucosa[1].

Regarding the use of dressings, the need is repeated to consider the physiopathology of IDs and the specificities of the injuries, which can be aggravated if an inappropriate dressing is used. In this sense, it is important to mention that, due to the physiopathology of the IDs, the dressings differ from the traditional ones, as any adherence to the wound bed can expand the damaged area and aggravate the situation. Another aspect to be emphasized refers to the fact that it is a dressing of great extension that requires daily change after body hygiene, in order to soften the odor coming from the injuries/exudate. In this sense, it is highlighted that the vaseline gauze dressing, prepared according to the proposed protocol, was used during a week by the 14 participants of the study, with no complications being observed but a significant increase in mobility. In this regard, it is mentioned that, due to the physiopathological characteristics of IDs, a minimal adherence of the dressing to the wound bed causes pain and increases the injured area, especially at the time of withdrawal. The few published works concerning the application of dressings in this specific clientele[5,16] do not present a significant level of evidence; they are case studies addressing products that do not prevent

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adherence of the dressing to the wound bed or are expensive dressings which, due to their high cost, have an indication of three/five[16] days of permanence, a fact that prevents daily body hygiene, causing discomfort/malaise, apart from hindering recovery.

CONCLUSION

Despite the participation of 14 individuals with ID, it was possible to verify the significant positive impact of the dressing with vaseline gauze on the mobility of the participants, a fact that occurred within the first 24 hours after its application. Given the results obtained, the evidence points out to the veracity of the hypothesis that the vaseline gauze dressing, prepared according to the protocol described in this study, contributes to the increase of mobility and, therefore, to the comfort of the patients with ID, which boosts a progressive hope in the prevention of PIs.

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