International Journal of Nursing Studies 51 (2014) 1373–1380

Contents lists available at ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns

Associations between individual characteristics and incontinence-associated dermatitis: A secondary data analysis of a multi-centre prevalence study

Jan Kottner [a,*], Ulrike Blume-Peytavi [a], Christa Lohrmann [b], Ruud Halfens [c]

[a] Department of Dermatology and Allergy, Charité-Universitätsmedizin Berlin, Berlin, Germany
[b] Department of Nursing Science, Medical University of Graz, Graz, Austria
[c] School for Public Health and Primary Care (CAPHRI), Maastricht University, Maastricht, The Netherlands

ARTICLE INFO

Article history:
Received 22 August 2013
Received in revised form 11 February 2014
Accepted 14 February 2014

Keywords:
Dermatitis
Aetiology
Incontinence
Nursing
Skin care

ABSTRACT

Background: Incontinent patients are at risk for incontinence-associated dermatitis. Prolonged exposures of the skin to urine and/or stool are causal factors but the exact aetiology and pathophysiology are not fully understood.
Objectives: The aim of the current investigation was to identify person and health-related variables most strongly associated with incontinence-associated dermatitis development.
Design: Secondary data analysis of a multicentre-prevalence study in 2012.
Settings: Hospitals, nursing homes, home care in Austria and the Netherlands.
Participants: Nursing home residents, hospital patients, home care clients who completed an incontinence assessment and who were incontinent ($n = 3713$). Mean age 81.2 (SD 11.2) years.
Methods: Demographic, functional and physiological parameters were compared between subjects with incontinence-associated dermatitis and without. A logistic regression model predicting incontinence-associated dermatitis was build.
Results: Subjects with incontinence-associated dermatitis were statistically significantly more often male, had more often diabetes mellitus, had a higher BMI, were less often affected by urinary but more often by faecal incontinence and showed higher degrees of functional and psychical impairments. Being faecal incontinent (OR 1.70; 95% CI 1.14–2.55), having diabetes mellitus (OR 1.46; 95% CI 1.03–2.06) and having "friction and shear" problems (OR 0.65; 95% CI 0.51–0.81) according to the Braden scale item were the strongest covariates for the presence of incontinence-associated dermatitis.
Conclusions: It is recommended to target special preventive skin care interventions especially to persons who are faecal incontinent and who have moist perineal skin, who have higher BMIs, who are diabetics, and who need increased assistance in moving.

What is already known about the topic?

- Incontinence-associated dermatitis is characterised by inflammation and tissue damage due to prolonged exposures of urine and/or stool.
- Not everybody who is incontinent of urine and/or stool develops an incontinence-associated dermatitis.

* Corresponding author at: Clinical Research Center for Hair and Skin Science, Department of Dermatology and Allergy, Charité-Universitätsmedizin Berlin, Charitéplatz 1, 10117 Berlin, Germany.
Tel.: +49 30 450 518 218; fax: +49 30 450 518 952.
E-mail addresses: jan.kottner@charite.de, jan.kottner@email.de (J. Kottner).

http://dx.doi.org/10.1016/j.ijnurstu.2014.02.012
0020-7489/

What this paper adds

- Persons who are faecal incontinent, are diabetics, who have an increased BMI, and have "friction and shear" problems are at high risk for incontinence-associated dermatitis development.
- Preventive skin care should be especially targeted to this vulnerable group.

1. Introduction

Maintaining and enhancing skin integrity of patients and residents is an internationally and nationally widely agreed upon goal within acute and long term care. During the last years the phenomenon of incontinence-associated dermatitis in the adult population gained increasing attention in clinical practice and research (Defloor et al., 2005; Ersser et al., 2005; Farage et al., 2007). There is emerging evidence that incontinence-associated dermatitis is highly prevalent especially in high risk settings like intensive care units or in geriatric care (Beeckman et al., 2011; Borchert et al., 2010; Junkin and Selekof, 2007; Long et al., 2012). Incontinence-associated dermatitis is a term characterising inflammation and tissue damage to the vulva, perineum, perianal region and buttocks in persons with urinary and/or faecal incontinence. Dermatitis severity varies from inflamed erythematous skin to severe painful partial thickness wounds with or without infection (Gray, 2010). Prolonged exposures of the skin to urine and/or stool are the causal factors but the exact aetiology and pathophysiology are not fully understood. There is convincing evidence that overhydration of the stratum corneum, increased skin surface pH, faecal enzyme activity, increased bacterial colonisation and physical irritation in the form of frequent cleansing and friction contribute to incontinence-associated dermatitis development (Ersser et al., 2005; Farage et al., 2007; Gray et al., 2012).

On the other hand it is evident that not everybody who is incontinent of urine and/or stool is necessarily affected by incontinence-associated dermatitis. Comparable to other complex health problems predisposing factors to develop this condition are not entirely clear. Identifying incontinent persons at high risk for incontinence-associated dermatitis development might be beneficial in order to implement adequate preventive measures. Targeted incontinence and skin care might help to allocate interventions and resources more purposeful. Therefore the aim of the current investigation was to identify person and health-related variables most strongly associated with incontinence-associated dermatitis development in persons who are incontinent.

2. Methods

2.1. Study design and settings

This was a secondary data analysis of two nationwide cross-sectional studies in The Netherlands and Austria conducted in 2012 (Halfens et al., 2012; Lohrmann et al., 2012). Both studies were part of the International Prevalence Measurement of Care Problems (LPZ) project organised at the University Maastricht (Halfens et al., 2013; van Nie-Visser et al., 2013). In Austria data were obtained from hospital patients and nursing home residents. In The Netherlands hospital patients, care home residents, and home care clients participated.

2.2. Participants

In Austria hospitals and nursing homes, in The Netherlands all health care institutions were invited to participate in the prevalence studies. In the participating institutions all patients, residents and clients being 18 years or older and being institutionalised at the day of the study were considered eligible. All subjects or their legal representative provided informed consent prior to be included in the data collection. Approvals of the study design and conduct were obtained from the responsible ethic committees in both countries.

2.3. Variables

Within the prevalence studies a broad range of demographic, functional and health variables are measured. These variables were clustered within so called modules and participating institutions selected according to their own preferences which modules they wanted to complete. The following modules are available within the LPZ: general information, pressure ulcers, incontinence, malnutrition, falls, and restraints. In the Austrian sample all modules of the LPZ were completed. For this secondary data analysis the modules "general information", "pressure ulcer", and "incontinence" were considered, because variables within these modules were most relevant for incontinence related skin and tissue health. Furthermore only those variables within these three modules were considered that were assumed to be related to incontinence-associated dermatitis including demographics and main medical diagnoses.

The 15 Care Dependency Scale items were used to measure the degree of nursing care dependency focusing on physical (e.g. eating and drinking, incontinence, body posture) and psychical domains (e.g. communication, sense of rules and values). The instrument was based on the nursing theory by Virginia Henderson and it has been translated into several languages and has been extensively validated today (Dijkstra et al., 2000; Kottner et al., 2010; Lohrmann et al., 2003). Item scores range between 1 indicating "complete dependency" and 5 indicating "complete independency".

The six Braden scale items were used to indicate pressure ulcer risk and also to characterise the functional status. Based on a conceptual model for pressure ulcer development this tool was first published in the 1980s (Bergstrom et al., 1987). Since then the instrument was translated into many languages, psychometric properties were extensively investigated, and it is internationally widely applied (Kottner and Dassen, 2010; Kottner et al., 2009a,b; Pancorbo-Hidalgo et al., 2006). The items "sensory perception", "moisture", "activity", "mobility", and "nutrition" are scored from 1 (most impairment) to 4 (no impairment). The