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A person-centred segmentation study in elderly care: Towards efficient demand-driven care

M.R. Eissens van der Laan [a,*], M.A.G. van Offenbeek [b], H. Broekhuis [a], J.P.J. Slaets [c]

[a] Department of Operations Management, Faculty of Economics and Business, University of Groningen, The Netherlands
[b] Department of Innovation Management and Strategy, Faculty of Economics and Business, University of Groningen, The Netherlands
[c] Department of Internal Medicine-General (Geriatrics and Gerontology), Faculty of Medical Science, University of Groningen, The Netherlands

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ABSTRACT

Providing patients with more person-centred care without increasing costs is a key challenge in healthcare. A relevant but often ignored hindrance to delivering person-centred care is that the current segmentation of the population and the associated organization of healthcare supply are based on diseases. A person-centred segmentation, i.e., based on persons' own experienced difficulties in fulfilling needs, is an elementary but often overlooked first step in developing efficient demand-driven care. This paper describes a person-centred segmentation study of elderly, a large and increasing target group confronted with heterogeneous and often interrelated difficulties in their functioning. In twenty-five diverse healthcare and welfare organizations as well as elderly associations in the Netherlands, data were collected on the difficulties in biopsychosocial functioning experienced by 2019 older adults. Data were collected between March 2010 and January 2011 and sampling took place based on their (temporarily) living conditions. Factor Mixture Model was conducted to categorize the respondents into segments with relatively similar experienced difficulties concerning their functioning. First, the analyses show that older adults can be empirically categorized into five meaningful segments: feeling vital; difficulties with psychosocial coping; physical and mobility complaints; difficulties experienced in multiple domains; and feeling extremely frail. The categorization seems robust as it was replicated in two population-based samples in the Netherlands. The segmentation's usefulness is discussed and illustrated through an evaluation of the alignment between a segment's unfulfilled biopsychosocial needs and current healthcare utilization. The set of person-centred segmentation variables provides healthcare providers the option to perform a more comprehensive first triage step than only a disease-based one. The outcomes of this first step could guide a focused and, therefore, more efficient second triage step. On a local or regional level, this person-centred segmentation provides input information to policymakers and care providers for the demand-driven allocation of resources.

1. Introduction

A more person-centred approach in providing healthcare is being promoted in many Western developed countries (Taylor et al., 2010). Person-centred care involves striking a better balance between patients' needs and their consumption of scarce healthcare supplies, and is associated with individualized treatment, patient education and empowerment, and shared decision-making (Mead and Bower, 2000; Auerbach, 2001; Kiesler and Auerbach, 2006; Rijckmans et al., 2007). However, providing person-centred care through the ad-hoc customization of care for each individual would be extremely costly and time consuming (Lynn et al., 2007). Therefore, the necessity is to determine persons' felt difficulties in fulfilling their basic biopsychosocial needs on a group basis (Plsek and Wilson, 2001; Boult and Wieland, 2010), with each group being sufficiently homogenous and having adequate volume in some of the important aspects that are to be managed (Lillrank et al., 2010). If such groups can be identified, the supply system may be arranged according to such need-based groups (Jordan et al., 1998; Edvardsson et al., 2008), enabling the creation of a flexible demand-driven healthcare system. The degree of person-centred care will largely depend on how well the levels of biopsychosocial need fulfilment that persons experience are reflected in the segmentation, and these experienced levels of needs fulfilment are considered an essential basis for developing

* Corresponding author. Nettelbosje 2, 9747 AE Groningen, The Netherlands.
E-mail address: m.r.van.der.laan@rug.nl (M.R. Eissens van der Laan).

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customized supply. In our focus on human beings' basic biopsychosocial need, we draw on human motivation theory (Maslow, 1943; Alderfer, 1969) that defines needs as the motivation for achieving a satisfactory level of functioning as a human being. Needs can be further differentiated into 'unfulfilled needs' i.e., a person does experience difficulties and complaints in their functioning, whether or not help is given and 'fulfilled needs' i.e., a person does experience no or moderate difficulties and complaints in their functioning, also whether or not help is given (Phelan et al., 1995; Slade et al., 1996). Although the healthcare population is almost as diverse as the population at large, there have only been very limited attempts to segment this population based on experienced needs fulfilment (Calkins and Sviokla, 2007). The World Health Organization's International Classification of Diseases is the best-known classification system, but this groups diseases rather than persons, and is based on objective clinical judgements, not on personally felt needs (Lillrank et al., 2010; Sanderson and Mountney, 1997).

Indeed healthcare systems appear to be most commonly designed around diseases and other clinical conditions (e.g., the breast cancer clinical path) or around the provider whose services the patients might need (e.g., the cancer clinic). More generally, healthcare systems are predominantly based on professionals' appraisal of patients' healthcare needs (i.e., outsider perspective) rather than on patients' own felt difficulties and complaints in their functioning as a human being (i.e., insider perspective) (Bate and Robert, 2006). This results in a fragmented supply of healthcare, and an inefficient use of scarce resources (Lillrank et al., 2010; Lynn et al., 2007). In order to initiate the transition from a supply-oriented, fragmented and reactive system towards a flexible, demand-driven organization of care, it is necessary to re-examine the variables on which a population's segmentation in healthcare is based (Lynn et al., 2007).

In this article, we show how a segmentation based on the experienced difficulties in biopsychosocial needs fulfilment results in the identification of robust segments. The chosen population, i.e., the target market, for this research are the elderly. Older adults are consuming an increasing share of the available healthcare resources (Lafortune et al., 2009a), especially in late age and close to mortality (Forma et al., 2009). The relative and absolute growth of this section of the population, and the many and heterogeneous difficulties and complaints they experience in their functioning, make it vital to identify possible commonalities in these difficulties and complaints. Moreover, as heterogeneous as their experienced difficulties and complaints may appear, these also seem to be highly interrelated (Boult and Wieland, 2010; Fried et al., 2001; Slaets, 2006). This increases the likelihood of finding commonalities in their experienced difficulties in fulfilling biopsychosocial needs.

The first contribution of this paper is to provide a set of person-centred segmentation variables that could provide a better starting point than diseases for offering person-centred care. We label these as person-centred segmentation variables to reflect the focus on the whole person rather than adopting a disease orientation. The second contribution is the empirical identification and description of robust, person-centred groups of older adults. Third, we illustrate the usefulness of this segmentation through an evaluation of the alignment between the resulting segments' experienced difficulties in fulfilling biopsychosocial needs and their current utilization of healthcare provision.

2. Background

2.1. The need concept applied

The concept of need has been difficult to define (Meadows et al., 2000; Marshall, 1994), which has contributed to a wide range in conceptualizations and in approaches used to assess need at both individual and population levels (Aoun et al., 2004). Aoun et al. (2004) noted that the meaning and connotations of need depend not only on the context in and the purpose for which they are applied, but also on the discipline involved (p. 33). Cohen and Eastman (1997, p. 142) argue that different perspectives on need are viable, that they are complementary, and that there is no single truth about the concept of need. Therefore, we here clarify and position our conceptualization of the term need. In line with human motivation theory (Maslow, 1943; Alderfer, 1969), we focus on human beings basic biopsychosocial needs, which are defined as the motivation for achieving a satisfactory level of functioning as a human being. The underlying theoretical assumption is that all people have biopsychosocial needs, which motivate them to do something about it, and that the fulfilment of these needs determines their well-being (Maslow, 1943; Alderfer, 1969; Acton and Malathum, 2000; Tay and Diener, 2011).

This basic need definition departs from some other concepts of need in four ways. First, we concentrate on felt needs as opposed to expressed, normative, and comparative need concepts (Bradshaw, 1994); More specifically, we look at unfulfilled felt needs in terms of what people experience themselves as difficulties and complaints in their functioning that may need addressing (cf. Aoun et al., 2004 p. 34). Second, this basic need concept does nót constitute a 'need for care', but a need for achieving a satisfactory level of biopsychosocial functioning. Third, theoretically, unfulfilled basic needs point to a lack of well-being (Tay and Diener, 2011), which might (but need not) indicate an unmet need for care (Brewin, 1992). The concept unfulfilled need thus differs from the concept unmet need for care (Carr and Wolfe, 1976). Finally, it follows that the concept of unfulfilled basic needs does not involve an expressed demand for care, nor does it entail the absence or presence of supply. Felt needs are only a starting point for communication with the older adult about possible demands.

2.2. Population segmentation based on persons' difficulties in fulfilling biopsychosocial needs

The "Bridges to Health" model developed by Lynn et al. (2007) comes closest to what could be called person-centred segmentation. This model stratifies the entire healthcare population into eight segments in which all people, at any point in their live, fit in. The segments are labelled as: 1.) Healthy; 2.) Maternal and infant health; 3.) Acutely ill; 4.) Chronic conditions, normal functioning; 5.) Stable but serious disability; 6.) Short period of decline before dying; 7.) Limited reserve and exacerbations; and 8.) Frailty with or without dementia (Lynn et al., 2007). Segmenting the general population into these eight hypothetical groups based on health prospects and priorities is a major step towards a person-centred supply policy. However, this segmentation includes all ages, and the constructed segments encompassing older adults are too broad and include too much variety to be useful in redesigning (elderly care) supply. Further, the "Bridges to Health" model is conceptual and not based on primary data regarding people's felt difficulties in fulfilling their needs.

In considering elderly care more specifically, Lafortune et al. (2009a, 2009b) have been one of the very few who have attempted to segment older adults into more homogeneous groups. These authors proposed segmenting the elderly population still living in the wider community into four groups: 1.) Relatively healthy; 2.) Physically impaired; 3.) Cognitively impaired; and 4.) Cognitively and physically impaired. Variables used to define the segmentation included reported hypertension, stroke, diabetes, cancer, circulatory, respiratory, arthritis, stomach and bladder problems, sensory limitations, cognitive impairments, depression and disability