



# Food shopping, sensory determinants of food choice and meal preparation by visually impaired people. Obstacles and expectations in daily food experiences



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## ABSTRACT

The number of visually impaired and blind people is rising worldwide due to ageing of the global population, but research regarding the impact of visual impairment on the ability of a person to choose food and to prepare meals is scarce. The aim of this study was threefold: to investigate factors determining the choices of food products in people with various levels of impaired vision; to identify obstacles they face while purchasing food, preparing meals and eating out; and to determine what would help them in the areas of food shopping and meal preparation. The data was collected from 250 blind and visually impaired subjects, recruited with the support of the National Association of the Blind. The study revealed that majority of the visually impaired make food purchases at a supermarket or local grocery and they tend to favour shopping for food via the Internet. Direct sale channels like farmers markets were rarely used by the visually impaired. The most frequently mentioned factors that facilitated their food shopping decisions were the assistance of salespersons, product labelling in Braille, scanners that enable the reading of labels and a permanent place for products on the shop shelves. Meal preparation, particularly peeling, slicing and frying, posed many challenges to the visually impaired. More than half of the respondents ate meals outside the home, mainly with family or friends. The helpfulness of the staff and a menu in Braille were crucial for them to have a positive dining out experience. The results of the study provide valuable insights into the food choices and eating experiences of visually impaired people, and also suggest some practical implications to improve their independence and quality of life.

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## 1. Introduction

The ability to undertake the activities involved in daily living is a fundamental aspect of a person's functional independence and quality of life (Lamoureux, Hassell, & Keefe, 2004). On a worldwide level, there are around 285 million visually impaired people, and in Poland around 1.8 million people are registered with a visual dysfunction (GUS, 2009). The number of visually impaired people is globally on rise due to the ageing of the world population. Vision impairment can have an impact across a broad spectrum of daily life activities, and can affect the ability to choose food and to prepare meals. If consumers with impaired vision are restricted in their

food choices, this might have implications on their overall level of life satisfaction and their nutritional status. The research of Vági, Deé, Lelovics, and Lakatos (2012) indicated higher obesity in males and a higher risk of malnutrition in blind females compared to people without visual impairment. The researchers found that blind and visually impaired people had many problems both in shopping for food and preparing it for consumption. These difficulties determined food choice, eating patterns and also affected the BMI and body composition of blind and visually impaired people.

Little research has been undertaken to understand the food shopping and meal preparation experiences of blind and visually impaired consumers. However, a review of the literature reveals a few empirical studies that have investigated the needs of consumers with a visual impairment when shopping (Baker, Stephens,

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& Hill, 2002; Baker, 2006; Dias de Faria, da Silva, & Ferreira, 2012; Kulyukin & Kutiyawala, 2010; Yu, Tullio-Pow, & Akhtar, 2015). More research is needed to better understand the desires, expectations and obstacles of blind people associated with the product choices and the perception of internal and external food quality cues.

The research of Baker (2006) shows that consumers with disabilities, and in particular shoppers with visual impairments, want more than structural accommodations; they want to be able to participate, to be understood, and to feel like they belong in the shopping environment. Shopping allows people with impaired vision to be active agents in their own consumption decisions and to establish their place in the marketplace. Childers and Kaufman-Scarborough (2009) reported that persons with a visual impairment purchased items online to the same degree as those without a disability, while in the case of other disability types the level of online shopping was significantly lower.

There is an extensive body of literature on sighted consumers' preferences, levels of satisfaction, expectations and needs. These aspects include e.g. the effect of products appearance on the amount of food consumed or on eating behaviours; the impact of the context of consumption on the degree of liking products/meals; wellbeing studies; the emotional responses of consumers in relation to products, brands and packaging (Spinelii et al., 2015; Vad Andersen & Hyldig, 2015; Ares, De Saldamando, Giménez, & Deliza, 2015; Wadhwa & Capaldi-Phillips, 2014; Edwards, Hartwell, & Brown, 2013). Many of these issues have not been addressed in the research on visually impaired people. Therefore, we are far less acquainted with the needs and expectations of visually impaired consumers as compared to those of sighted consumers.

As noted in Merabet and Pascual-Leone (2010), a systematic review indicated that blind individuals (especially those who were blind from birth or from very early in life) revealed comparable and in some cases even superior behavioural skills when compared to sighted subjects (including behavioural and cognitive perceptions, speech discrimination, verbal memory recall, finer tactile discrimination thresholds, perceptions in the auditory domain, auditory discrimination and spatial sound localisation). This indicates that despite years of early onset blindness, the brain retains an impressive capacity for visual learning. Such skills are necessary for blind people in their everyday functioning and in dealing with multiple barriers. These discriminatory abilities related to perception are also necessary during food shopping and meal preparation. Doets and Kremer (2016) point out that when gustatory and olfactory functioning decline with age, the role of visual cues may therefore become stronger.

Realistically, the world of visually impaired people is quite different than that of sighted persons, due to their lack of a visual perception of the environment and to the difficulties they face related to daily functioning. Thus, the following questions arise: What are the important factors for people with impaired vision when choosing a food product? Are they restricted in their food choices? Do they use the full range of food products available in food shops? What are the sensory factors they pay attention to while shopping? And what obstacles do they face when preparing meals?

Therefore, the main aim of this research project was to gain insights into the factors determining the choices of food products by people with various levels of impaired vision, to identify the barriers they face while purchasing food, preparing meals and eating out, and to evaluate what aids would be helpful for them in food shopping and meal preparation. Such results can serve both the public sector and food policy making (e.g. labelling) but also can contribute to better understanding of the needs of the visually impaired by food producers and service providers e.g.

restaurateurs. A novelty of this research is to determine the importance of sensory attributes in the selection of different group products by visually impaired people. Learning about the sensory perception of the visually impaired provides valuable insights into and inspirations how to strengthen their sensory experiences.

## 2. Methods

### 2.1. Participants

The participants in the study comprised 250 respondents of different ages and levels of impaired vision. A convenience sampling procedure was used. Regarding the socio-economic characteristics of the respondents, the majority were female (61.2%), aged between 25 and 44 years (53.2%). 12% of the participants were aged between 16 and 24 years, while 34.8% were over 44 years of age. Almost 1/3 of the respondents lived in rural areas, and 37.2% declared themselves to be residents of cities with above 200 thousand inhabitants. Most of the participants (79.2%) had a secondary or higher level education, and 20.8% had completed a vocational and/or primary education. A plurality of respondents were married (44%) while 38.4% were single. Detailed characteristics of the sample group are provided in Table 1.

The respondents were divided into four distinctive categories, according to their level of visual dysfunction. 41.6% of those participating in the survey were completely blind; 22.8% had only a sense of light; 15.2% reported that they could see very little and were unable to recognise the details on packaging or read information, even under favorable lighting conditions; while 20.4% could see very little but could read information written in a large font and recognise the details on packaging under conditions of favorable lighting. It was found that 56% of the respondents had possessed their vision dysfunction from birth, 34% had lost their vision slowly due to a disease, and 10% had undergone a rapid loss of vision due to an accident or injury.

### 2.2. Structure of the questionnaire

The questionnaire was developed in close cooperation with the blind and visually impaired respondents. A draft version was pre-tested with eight respondents with various levels of vision impairment. The pre-test was sent electronically to check whether some important issues had not been omitted taking into account the target group, if the questionnaire was not too long and whether completing it caused problems. Then, following the recommendations of the respondents, relevant corrections to the draft version of the questionnaire were introduced to facilitate the data collection process. The final questionnaire contained 29 questions in the form of single-choice, multiple-choice and open-ended questions.

The questionnaire consisted of five main sections: I. Food shopping behaviour, II. Factors affecting food choice, III. Role of sensory aspects in food shopping decisions, IV. Meal preparation and eating out of home and V. Solutions to facilitate food shopping and meal preparation.

Section I focused on the way visually impaired people shop, the places where they buy food and factors enabling them to do their food shopping. Respondents were asked in a multiple-choice question to indicate if they do shopping alone, with family, with a friend, with a helper, family/friends do shopping, with support from shop assistants'. Considering the places of shopping, participants could choose multiple items (e.g. local, shop/grocery, supermarket, market/bazaar and Internet). To identify factors enabling respondents to do food shopping independently an open-ended question "What would help you to do food shopping independently" was used.

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