Sleepless nights in hotels? Understanding factors that influence hotel sleep quality

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ABSTRACT

Sleep quality heavily shapes the tourism experience because tourists spend a large amount of their travel time sleeping. In this study, we propose a conceptual framework of factors influencing sleep quality in hotels based on personal and hotel characteristics. Personal characteristics include demographic, biopsychosocial, and tripographic factors; hotel characteristics consist of hotel location, facilities, and the sleeping environment. By analyzing TripAdvisor hotel review data in Los Angeles, we estimate a mixed-effects ordered logit model to understand the factors that influence sleep quality as well as the hotel sleeping environment as indicated by sentiment analysis. The results validate our proposed conceptual model. Hotel sleep quality is found to vary by age, gender, traveler type, and review experience. In addition, hotel star rating, nearby restaurant density, number of hotel floors, and the hotel sleeping environment also influence hotel sleep quality. Implications of this study are provided in closing.

1. Introduction

Sleep is a significant component of travel and hotel stays. In essence, hotels are spaces solely dedicated to sleep for travelers. One of hotel guests' top requests is to sleep soundly on a comfortable bed in a nice guestroom (Withiam, 1999). Excellent sleep has even become a form of hedonic consumption for travelers (Valtonen and Moisander, 2012), whereas poor sleep is a travel-related stressor and one that concerns many travelers (Chen, 2017). As such, the overall hotel experience has been found to be largely influenced by hotel sleep quality (Liu et al., 2013). Although sleep quality differs based on individual characteristics, the effects on sleep quality of spatial change and an unfamiliar sleeping environment while traveling should not be overlooked. Tourism and hospitality scholars and professionals alike must be prepared to identify, acknowledge, and understand the locational and environmental factors that are uniquely attributed to sleep during hotel stays. Hence, our first research objective is to construct an analytical framework to examine the factors, both general and travel- and hotel-related, that may affect travelers' sleep quality in a hotel.

Despite being arguably the most important function provided by a hotel, research on hotel sleep and its associated factors remains highly underexplored (Pallesen et al., 2016). Most studies only briefly acknowledge the importance of sleep for travelers without engaging in further analysis. Little is known about whether and how sleep-related changes caused by travel and hotel factors affect travelers' sleep quality. An exhaustive review of the tourism and hospitality literature found no evidence of systematic and comprehensive investigations on sleep quality and its relevant factors. The lack of empirical insight on sleep in the travel context underscores the need to unveil influences on sleep while traveling. Therefore, our second research objective is to empirically investigate the travel- and hotel-related factors that may affect hotel guests' sleep quality within a conceptual framework.

To fill the void of research on individuals' sleep quality during travel and hotel stays, the purpose of this study is to establish a conceptual framework by identifying and incorporating unique travel- and hotel-related factors obtained through relevant literature to explore how these factors contribute to travelers' subjective sleep quality when staying in hotels. The association between travel (including hotels) and sleep quality is complex and multifactorial. Understanding these factors may provide novel insights into how to improve sleep for travelers. To address our research objectives, we conducted our study by integrating secondary geo-spatial and TripAdvisor review data for hotels in Los Angeles. Doing so allowed us to explore, identify, and uncover how different factors influence sleep quality as rated by reviewers. The findings of our study not only contribute to a holistic understanding of sleep quality and its associated factors for travelers but also reveal

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practical suggestions that may help hotel operators to improve guest satisfaction by focusing on guests' sleep quality in hotels.

2. Conceptual framework

Sleep is a biological mechanism by which humans recuperate; it is necessary for survival. Sleep can be defined as "a regular, recurrent, easily reversible state of the organism that is characterized by relative quiescence and by a large increase in the threshold of response to external stimuli relative to the waking state" (Yi et al., 2006, p. 311). Sleep can be measured on a number of dimensions, such as duration, continuity (i.e., amount and distribution of sleep and wakefulness), and architecture (i.e., stages of sleep) (Mezick et al., 2008). It can also be measured by its quality, typically through self-reported perceptions of how soundly one sleeps or how rested one feels after sleeping (Mezick et al., 2008). While good sleep quality is strongly associated with better physical, cognitive, and psychological well-being, suboptimal sleep has been tied to cognitive and psychological impairment, poor physical health, increased risk of disease, an increase in work- and non-work-related accidents, and deteriorated quality of life (Brand and Kirov, 2011; Pallesen et al., 2016).

2.1. Previous research on sleep quality

Research from an array of disciplines including epidemiology, etiology, physiology, biology, psychology, sociology, medicine, neuroscience, and engineering has studied sleep quality and its associated factors (Krueger and Friedman, 2009; Roth, 2003). The majority of prior research suggests that sleep quality is affected by individual differences as well as environmental characteristics (Roth, 2003). Individual factors belong to a wide range of domains: demographics (Krueger and Friedman, 2009), fatigue (Silva et al., 2016), family structure (Krueger and Friedman, 2009), physical illness (Krueger and Friedman, 2009), mental state (Brand and Kirov, 2011), lifestyle (Lauderdale et al., 2006), social support (Knutson, 2013), and healthy behaviors such as physical exercise (Krueger and Friedman, 2009) among others. The effects of these attributes on sleep quality are typically internal and stable. Environmental factors include but are not limited to traffic noise (Evandt et al., 2016), lights (Zeitzer et al., 2000), neighborhood quality (Hale et al., 2013), the mattress (Ancuelle et al., 2015), and ambient temperature (Kayaba et al., 2014). Although external, many, if not all, environmental attributes remain relatively consistent in the short term. For the purposes of sleep research, people are typically asked to use their usual residence; thus, findings from mainstream sleep research often do not account for dynamic sleep conditions when people are traveling, such as spatial changes and alterations to their typical sleep environment. Although travel- and hotel-related factors are exogenous to sleep, their influence on sleep quality cannot be ignored.

Research in travel and human geography has found that jet lag and distance can have detrimental effects on sleep quality due to spatial change. In general, the severity of poor sleep related to jet lag depends on one's travel direction (eastward or westward), timing, and the number of time zones crossed during a transmeridian flight (Stone and Turner, 1997). Additionally, travel distance is negatively associated with sleep quality given its direct impact on fatigue (Silva et al., 2016). Recently, scholars in tourism and hospitality have begun to study travel- and hotel-specific attributes that may influence sleep quality; however, only two relevant studies have been identified. In a study on the factors that shape hotel guest satisfaction through the survey data of customer reviews on TripAdvisor, Radojevic et al. (2017) found that business travelers and experienced travelers reported lower sleep quality compared to their leisure and inexperienced counterparts. High-end hotels (i.e., those with higher star ratings) were perceived as providing their guests better-quality sleep. Another empirical study by Pallesen et al. (2016), using a survey through an online Norwegian national newspaper link with over 2000 recruited respondents, investigated how hotel guests slept and the factors that typically disturbed sleep in hotels. They found that, in general, people reported sleeping less well in hotels than at home; however, there were noteworthy individual differences among respondents: males, younger guests, and travelers with insomnia reported better sleep than others. Unsatisfactory pillows, a high room temperature, an uncomfortable mattress, poor duvet, street noise, poor indoor climate, excessive light from windows, and noise from the ventilation systems were identified as salient factors that frequently disturbed guests' sleep quality in hotels. Even though several factors have been identified as affecting hotel sleep quality, the aforementioned scholars' methods were largely piecemeal; existing studies have neither established a theoretical foundation nor comprehensively examined travel- and hotel-related attributes that affect sleep.

2.2. Proposed model

In this study, we propose a model that categorizes hotel guests' potential sleep factors into two meaningful domains, personal characteristics and hotel characteristics, each of which consists of several distinct attributes (see Fig. 1). This conceptual approach allows a
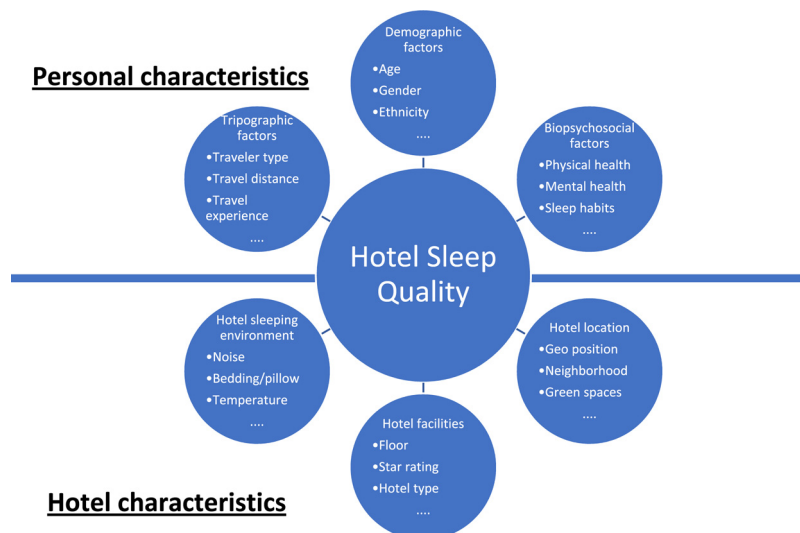

Fig. 1. Conceptual framework of factors shaping hotel sleep quality.