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The Rhythm of the Unit Is the Pace of Life: A Study of Everyday Activities and Sleep in Swedish Residential Care

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Abstract

Social and physical activities can improve sleep in older people. However, living in a residential care facility has been associated with a limited potential for activities and increased inactivity, reflected in poor sleep among residents. In turn, poor sleep can impair physical and mental functions. This paper explores sleep habits and everyday activities at three residential care facilities and investigates the link between sleep habits and everyday activities from the perspective of the residents. Data were collected through observations of daily life and interviews with residents. The results showed that fixed times during the day reduced daytime sleep and motivated them to go to the day room, thus enabling social interaction. More impaired residents spent more time in the day room napping or being less active. The residents stated that going outdoors was a desired activity, thought to improve sleep. However, the activity did not occur to the extent the residents wished for. Maintaining mobility and influence over daily activities together with regularity seemed to improve sleep. Awareness among staff of the need for stimulating and enriching activities, as well as access to bright light is requisite. Specific consideration should be given to residents who have difficulties communicating their wishes and/or impaired mobility.

Keywords

Everyday Activities, Older People, Residential Care Facility, Sleep

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1. Introduction

People at residential care facilities (RCFs) frequently experience sleep disturbances, such as difficulty falling asleep and waking up during the night [1]. This is thought to be affected by levels of physical activity, environmental factors, and health status [2] [3]. Epidemiological studies at RCFs have revealed associations between everyday physical and social activities and improved sleep [4] [5], and insufficient sleep has been associated with adverse health outcomes, such as symptoms of depression and cognitive dysfunction [6]. Activities, rather than extensive use of hypnotics and sedatives, could be used as means to improve sleep in people at RCFs.

Everyday activities could be classified as routines, that is, rigid patterns of behaviour or normal functioning. “Routine” is sometimes used interchangeably with habits, rituals, or rhythms, emphasizing the regularity of the occurrences [7]. Simultaneously, having regular, daily routines may facilitate regulation of the sleep/wake cycle [8]. However, if the routines imply less daytime activity, less exposure to bright light, more time spent in bed, a change in bedtimes, or light and noise disruptions at night, the routines could have a negative effect on sleep [9]. It has been implied that when a person moves to an RCF, he or she is forced to adjust to an environment where the staff mandates daily life [7]. People living in RCFs have expressed dissatisfaction with social relationships and activities [10], which could lead to inactivity and social isolation that negatively affect sleep. Exploring activities in RCFs and how these are perceived to affect sleep are therefore important.

Sleep in Late Life and Its Association with Everyday Activities

In people aged 60 and over, sleep patterns change, with increased night-time waking, less deep sleep, decreased sleep efficiency, and longer sleep onset latency [11]-[13]. These sleep changes are frequently associated with nocturia, pain, and chronic conditions [1] [14] [15]. Other factors that contribute to sleep disturbances are increased time spent in bed, lack of social interaction, disruption of the circadian rhythm, and noise [16]. Sleep is regulated by two processes: one sleep-dependent and a second sleep-independent process. The sleep-dependent process can be influenced by sleep restriction and exhausting activities, increasing sleep propensity. The latter process, however, is an endogenous drive in humans to fall asleep and wake at a certain time, regardless of the time previously spent sleeping or awake [17]. Daytime activities reinforce a diurnal rhythm. Several quantitative studies [5] [18]-[20] have shown positive associations between activity and sleep at advanced age (57 years or older). Because activities play such an important role in sleep and health, it is essential that scheduled activities at the RCF are of interest. Investigation of activity and sleep habits in RCFs, activities requested by the residents, and activities perceived to affect sleep contribute to valuable knowledge when implementing activities at RCFs. Implementation of activities founded in the residents’ interests could increase the activity levels, thus improving health factors such as sleep. The aim of the study was to explore sleep habits and everyday activities at residential care facilities and investigate the linkage between sleep habits and everyday activities from the perspective of the residents.

2. Methods

2.1. Design

An explorative, observational design was chosen to identify patterns or themes in everyday activities, behavioural regularities, and daily life [21] among residents in RCFs. Observations of real-world contexts of everyday life facilitate the understanding of complex situations. To increase the completeness of data, semi-structured interviews were undertaken following the observation periods [22].

2.2. Sampling

Convenience sampling of RCFs was carried out; the only inclusion criterion was that the units should be general geriatric units. Six units in three RCFs (X, Y, Z) were included. The RCFs were located in smaller communities in Sweden. The number of residents varied from seven to 16 per unit, and each resident had his or her own apartment. Purposeful sampling was carried out for the interviews. Participants were selected based on physical and mental stability and cognitive ability to answer questions. Staff members recommended that the researcher contact residents whom they found met the inclusion criteria. This approach was chosen in order to include those residents who would be able to share the most information. The researcher sought variations in age, gender,

and place of residence. In all, 12 residents were asked to participate in the interviews. Two declined due to pain, advanced age, or lack of interest. The ten residents interviewed were between 72 and 100 years old; seven were women. The spread of interviewees between the RCFs was five, two and three respectively (**Table 1**).

2.3. The Context of Residential Care Facilities in Sweden

RCF are available for those with extensive health and care needs and governed by the municipalities. In the RCF the residents have a rental apartment (a room, toilet and kitchenette) furnished with their own furniture except for the bed which should be vertically adjustable. Food and care is paid separately. The facility also holds joint spaces such as dining room and TV room. Care is mainly performed by nurse aids, but a nurse is employed at the facility and physiotherapist and occupational therapist are available. The facility is staffed 24-7 and care and supervision is provided at all times. The residents interviewed and observed in the present study all had their own apartments with 24-7 care and supervision. All had their meals and coffee in the joint spaces.

2.4. Data Collection

Thirty-nine observations, each lasting 1(1/2) - 2 hours, were performed at different points during the day (8 am - 8 pm) in order to capture the activities that occurred in the day rooms. During observations, field notes were made following a protocol. Observations were made of what activities took place, who participated, when the activities took place, and how and where they were conducted. Participation during observations extended to informal conversations with staff members and residents. The number of observations at each facility was 10, 12, and 17 respectively. Interviews served the purpose of clarifying activities and behaviours that were observed and providing a deeper understanding of the subject matter of the study. The interviews were carried out in the residents' apartments. A semi-structured interview guide was used for the interviews, covering questions about activities and sleep. Interviews were recorded and transcribed verbatim for analysis. All data were collected over a six-month period from September 2011 to January 2012. The first author carried out all observations and interviews. At three occasions, the first author was accompanied by a nurse co-observer to assure the reliability of the observations.

2.5. Data Analysis

Field notes were read through several times and text themes were identified. Open coding of the transcripts, describing the content, was then carried out [23]. Similar codes were gathered into broader categories. The coding system captured the features of the specific categories and revealed differences and similarities [24] (**Table 2**).

Table 1. Description of residents interviewed, n = 10.

Gender (n)	
<i>Male</i>	3
<i>Female</i>	7
Age (median, range)	90, 72 - 100 years
Marital status (n)	
<i>Single</i>	1
<i>Married</i>	1
<i>Widowed</i>	8
Length of interview (range)	19 - 55 minutes
Distribution of respondents between the Residential Care Facilities (n)	
<i>Residential Care Facility X</i>	5
<i>Residential Care Facility Y</i>	2
<i>Residential Care facility Z</i>	3

Table 2. Examples of the steps taken when analysing the data.

Coded section	Code	Sub-category	Category
<i>I don't want to be outdoors freezing. I'd rather stay inside. The last couple of times I chose not to come along outdoors.</i> (Female, 96 years)	I don't want to freeze. So I have stayed inside instead.	Going out depends on the weather.	Time to go outdoors
<i>Sometimes my sons come here...they take me outdoors now and then. I have asked if I may go for a walk on my own, but I am not allowed to.</i> (Male, 91 years)	My children help me go outdoors.	Need and receive help to go outdoors.	Time to go outdoors
	I have asked, but am not allowed to leave on my own.	Feel restricted from going outdoors.	
9:06. <i>The tired woman with the walker is sitting and dozing off. "Would you like to go to bed for a while?" asks a staff member.</i> (Residential Care Facility Z)	Falling asleep.	Resting, dwelling, sleeping.	Sleep—in or out of pace
<i>In this place? I sit and stare, I suppose. I can't remember anything else.</i> (Female, 89 years)	Sitting and staring.	Lack of things to do.	Letting time go slowly

The researchers independently created lists of categories that were compared and discussed. The first author then created a list of categories in order to reduce the initial number. All the researchers subsequently discussed the labelling of the categories. The transcripts were sorted into codes and sub-categories and were grouped under broader categories [25]. Finally, the transcripts of the interviews were read, coded, and sorted under the sub-categories and categories decided upon, following the same method. The four authors who performed the analysis had experience as registered nurses in hospital care and/or care of older people.

2.6. Ethical Considerations

Verbal and written information about the study was given to the staff and residents at the units. Written consent was obtained from the manager of each facility, the head of the department of geriatric care in the municipality, and the residents who were interviewed. The study was approved by the regional Ethical Review Board in Lund (Ref. No. 308/2011).

3. Results

Six categories emerged from the data. An overarching theme—*The rhythm of the unit is the pace of life*—unfolded during the analysis as being the latent content of data connecting the categories with each other (Figure 1). Residents expressed minor sleep complaints in the interviews. However, descriptions of the scheduled activities together with the residents' experiences of the activities enabled the researchers to interpret the link between sleep and everyday activity. It was clear that meals and coffee times created the main structure of the day. This structure, established by the staff, provided the main rhythm of the day for the residents.

3.1. Sleep—In or out of Pace

Most of the residents expressed satisfaction with their sleep and only minor disturbances. Several residents felt that their sleep had become better since they moved to the RCF. Their sleep had become more regular, having a distinct pace. If disturbances did occur, they were mostly problems falling asleep due to thoughts about deceased loved ones or past events in life. Such events were exemplified as loss of a working role or a house or the appearance of illness. At other times it could simply be that the resident went to bed too early and was not sleepy. It was experienced that the difficulties of falling asleep decreased when the bedtime was postponed, indicating that the resident had been put to bed too early in order to be able to fall asleep. One resident stated that it took longer to fall asleep now compared to before he moved in. The man missed his daily walks in the woods and claimed that outdoor walking made him tired and facilitated falling asleep. Lacking the possibility of doing so now put the man off his normal pace and impaired his sleep. Nightly awakenings were considered a minor problem by the residents.

Some residents were quite strict about avoiding sleep during the day and about sleeping only at night. This was founded in a belief that napping would impair their nocturnal sleep and the need for a distinct sleep/wake pattern. Residents who napped commonly retired to their apartment after lunch to rest, nap, or take it easy. The

Theme	The rhythm of the unit is the pace of life					
Categories	Sleep—in or out of pace	Able and willing to socialize	Rhythm of movement—mobility or immobility	Time to go outdoors	Mentally escaping the present	Letting time go slowly
	<i>Resting, dwelling, sleeping during the day</i>	<i>Social interaction or lack thereof in the unit</i>	<i>Indoor exercise/physiotherapy</i>	<i>Needs/receives help to go outdoors</i>	<i>Watching television, pictures or a film</i>	<i>Gazing at activities that are taking place</i>
	<i>The rhythm of the unit at night</i>	<i>Social contacts outside the unit</i>	<i>Physical activity with a purpose</i>	<i>Obstacles to going outdoors</i>	<i>Listening to the radio/music</i>	<i>Lack of things to do</i>
Subcategories	<i>Personal sleep habits</i>	<i>Physical contact</i>	<i>Twitching, shaking, banging, clapping</i>	<i>Moving/walking outdoors</i>	<i>Reading</i>	<i>Waiting</i>
	<i>Sleep quality</i>	<i>Meals and coffee</i>	<i>Physical limits</i>	<i>Spending time in another place</i>		<i>Sitting down</i>
			<i>Environmental limits</i>	<i>Likes spending time outdoors</i>		

Figure 1. The overarching theme, categories and the sub-categories of each category.

residents usually restricted their napping to between lunch and afternoon coffee, which signified an approximate two-hour span. Everyday activities residents emphasized as facilitating sleep were spending time outdoors and the scheduled activities during the day. Thus the time points of the routines at the unit enhanced a stable rhythm.

...if I go to bed during the day, it may well happen that I fall asleep and I don't want to, "cause I want to sleep at night. I believe that if I sleep during the day, I will not be able to sleep at night...Instead I sit here peacefully in my armchair and read, watch something, or solve crosswords, but I won't go to bed." (Female 83 years)

3.2. Able and Willing to Socialize

Meals and coffee times were fixed points during the day. These motivated the residents to leave their apartments or to finish something they were doing. Meals and coffee times were emphasized continuously in the interviews as creating a time frame for everything else. Coffee was usually intertwined with some social or cultural activity, such as conversations, discussions, or reading circles, whereas the dinner at 5 pm was more quiet and tranquil. Meals and coffee could be interpreted as having two functions: creating a daily rhythm and inviting residents to social interactions. As an example of the social aspect; afternoon coffee was served at one of the facilities. This day, the staff had baked a cake to have with the coffee. The staff sat together with the residents, small-talking about dogs, sleep, coffee and the cake (it was seldom that the staff had the time and opportunity to bake). The residents commented on how good the cake and coffee was.

The ability to talk “resident to resident” was difficult due to residents’ impaired hearing or illnesses that affected speech. It was further emphasized in the interviews that the residents did not know anyone at the facility and that the best people to talk to were the staff, because they spoke clearly and loudly.

No, I can't talk so much to the old people here. If I say something they will not answer. They don't hear that well and I am not very chatty myself. So I can't really complain about the others. (Female 86 years)

3.3. Rhythm of Movement—Mobility or Immobility

Most physical activities took place indoors. The main activity was to walk between the apartment and the day room for meals and coffee. Another common physical activity was cycling on an exercise bike that could also be used by people in wheelchairs. Other activities were individual physiotherapy programs, usually induced by a specific physical injury, which thus were available only for a few.

Mobile residents would also take the daily paper from the day room and read it in the privacy of their own apartment rather than remain in the day room. The behaviour clearly marked the difference between immobile and mobile residents, because the latter had the possibility of choosing where they wanted to spend their time. At one facility it was observed that several of the residents asked for the morning paper right after breakfast. Then they would leave for their apartments and read the paper in privacy. The day room was a place where those residents had their meals or coffee, but other activities were kept private.

3.4. Time to Go Outdoors

All facilities had a patio or balcony for the residents to use. However in the winter especially the balconies were

used by residents and staff that smoked, since this is prohibited indoors. Thus smokers could easily come out several times a day together with smoking staff, while non-smokers were left indoors at these times. It was further observed that residents seldom left the facility for a walk or to simply to spend time outdoors. The residents responded that they spent more time outside during the summer but in winter it would be rare due to the weather and icy paths. Going outside for a walk or sitting in the patio usually took place in the mornings between breakfast and coffee or just before lunch, if there was time. One resident explained that he sometimes wheeled to the day room to watch TV, but in the summer when it was hot and sunny, he would rather spend his time outdoors. He enjoyed sitting in the sun and getting tanned. Also taking walks was put forth in the interviews.

I've asked if I can go outdoors by myself, but they won't let me. I do miss... When I had my own apartment [i.e. ordinary housing] I used to go down to the market and do my shopping and...or I would take a stroll. It is nice around here, very beautiful. (Male 91 years)

3.5. Mentally Escaping the Present

Several residents enjoyed reading, including books they had read before as well as new detective stories. One resident said that now there was more time to read, more than ever before, and books provided an escape from this world into another. Sitting watching television was quite common but the residents did not always find the programs interesting. They frequently fell asleep in front of the television. Both watching television and reading were mentioned as bedtime routines by several residents. The radio and music were mentioned as ways of keeping the silence away and were sometimes played in the day rooms.

I don't know the people here. They could talk at the dinner table, but it's always quiet. I guess, since it's always quiet, it should be that way. That's why (...) gave me a radio that I can sit and listen to. (Female 96 years)

3.6. Letting Time Go Slow

It was common for the day to pass slowly and for some residents to simply sit in silence in the day rooms or in front of the television without watching. However, it was stated during the interviews that remaining in the day room was due to a lack of activities or the perception that the unit was the final station in this life, which could be interpreted as there was no point in engaging in activities.

Some of the passivity arose from waiting for something to happen, such as the start of an activity or for a meal to be served or from an unwillingness to participate in some of the scheduled activities. Immobile residents could remain in the day room from breakfast until bedtime. One of the residents, who was mobile, spent most of the day in the day room just for company and to feel less lonely. However, most of the residents who could walk or operate their wheelchairs on their own left the day room for some privacy.

4. Discussion

Several residents felt that their sleep had become better since they had moved to the RCF. Factors causing the improvement seemed to be an increased feeling of security and more regular bed hours. It was also emphasized that the timing of meals and coffee regulated daytime activities and provided a fixed rhythm for the day. Similarly, a pilot study [8] showed that scheduled activities and fixed times for meals led to more stable sleep/ wake rhythms in institutionalized older people with dementia. When life is no longer about work, mealtimes acquire greater significance in structuring the day, according to [26]. Another reason for sleep satisfaction in the current study could be that most residents were mobile and cognitively preserved. They had greater opportunity to retain their own routines and pace and they were less influenced by the rhythm of the unit.

However, situations were also found that reflected a lack of control and decision-making of the residents. The staff emphasized the importance of scheduled activities for the residents, but the activities did not spring from the wishes of residents or a person centred approach. The residents, on the other hand, had clear opinions about what activities they preferred to do, and the lack of activities of interest was thought to cause a great deal of sleeping and sedentary behaviour during the day, according to the interviewees. Due to discontent with the scheduled activities or as to accentuate the lack of shared decision-making, some residents retired to their apartments instead of participating. Similar attitudes were found towards scheduled activities in British care homes [27]; with limited interest among the residents or that the activities were perceived as trivial or childish. Residents in Swedish RCFs have expressed dissatisfaction with activities as well as their own self-determination,

emphasizing the importance of being able to make their own decisions and having the opportunities to engage in freely chosen activities [10] [28].

The overarching theme *the rhythm of the unit is the pace of life* could be interpreted both as a positive structure for the day, but also as a restricting order preventing personalized care. Song *et al.* [8] described positive effects on sleep-wake pattern in dementia. In the present study residents emphasized the structure of the day, but did not express discontent with timing of things, rather the content. Evers *et al.* [27] also describe a rhythm of the care home, which uniformed sleep-wake patterns in the residents. However, it is further put forth that the rhythm is based on staffing and routines and instead of stressing individuality a hospitalized life-style is introduced [27].

The residents felt that sleep was affected by the possibility of going outdoors and pursuing activities during the day. Environmental cues have proved vital for stabilizing the circadian rhythm [11]. The suprachiasmatic nucleus in the hypothalamus serves as the central pacemaker of the circadian rhythm. Synchronization of the rhythm takes place mainly through environmental light [29]. Many residents were sleepy during the day, even around breakfast time, when they should have been rested. The ageing of the brain results in weaker and more disrupted sleep/wake rhythms as well as decreased secretion of endogenous melatonin [6]. External cues, such as physical inactivity, nocturnal noise/light levels, and low light levels during the day could further impair sleep [30]. Older people in care homes in particular spend little time exposed to bright light, which is one of the most powerful *zeitgebers* of the sleep/wake rhythm, and this may contribute to increased sleepiness during the day [6]. A difficulty for the residents was that they found it inconvenient or unpleasant to go out when the weather was cold, windy, or rainy. Several residents also needed assistance to leave the facility, which was not always provided. The indoor environment was dusky due to dim or sparse lighting, which further could impair the sleep-wake rhythm. Sloane *et al.* [31] introduced high-intensity ambient bright light in public areas of RCFs, and found that those receiving bright-light in the morning or all day increased their night-time sleep. Thus, high-intensity bright light indoors could compensate for not being outdoors, especially in the winter when the opportunities to go outdoors are few.

In the present study, residents who needed to be wheeled by staff usually remained in the day rooms after having breakfast, although they were moved by the staff from the dining table to the television room. No particular activities were introduced to those residents, although sometimes the staff would turn on the television or put on some music to chase the silence away. The residents would sit motionless, shifting between wakefulness and slumber. It has been found that remaining in the day room has an obvious negative effect on sleep [32]. In an observational study [33] conducted at Norwegian RCFs, it was found that residents with a high degree of dependence were left in the day room all day, which is similar to the present study. The threats to sleep as pointed out previously [11]; are not getting enough social interaction with the world outside the facility, little time exposed to outdoor daylight, and excessive daytime sleep that prevents social interaction. Spending time in bed during daylight hours and a lack of social cues may aggravate the changes in the circadian rhythm.

Strengths and Limitations

Trustworthiness of the present study is reflected by credibility and voice. Credibility was achieved through a detailed description of the methods used, through study time lines, and through methodological choices that were made. Furthermore, triangulation of data was used in order to increase the understanding of the phenomenon under study. The advantages of triangulation are confirmation and completeness of data [34]. To accomplish rigour, there was systematic collection of field notes using a protocol. The compliance of the protocol was checked at three occasions through a co-observer simultaneously making notes. Through the analysis, meaning units were selected by the first author (AH) and categories and subcategories were verified by the other authors (AC, AW, CF), which increases the credibility of the results [25] [35].

The sample size of this study could be considered as small. However, qualitative studies emphasize context and the lived experience of the participants; which is why the sample size of a qualitative study could be significantly smaller compared to a quantitative study. No specific guidelines of sample sizes exist. However, Moon *et al.* [36] recommend at least 6 - 7 participants for ethnographic studies and 12 to 15 participants for other qualitative designs, depending on the aim of the study. This study used data triangulation of observations and interviews, which is similar to ethnography, although the data collection was done during a shorter time period and in two-hour intervals. This could motivate a sample larger than that for an ethnographic study. Twelve residents were asked to participate, and ten gave their consent. Data would probably have been richer if all twelve would

have agreed to an interview. On the other hand did the categories repeat in the performed interviews, which indicate saturation of data [36].

The inclusion of respondents who were physically and mentally stable for the interviews could imply that the voices of the more dependent and fragile residents were missed. The descriptions of participation in activities and how sleep was perceived might therefore show a more optimistic view than is the case among the general group of residents. Possibly the variety among residents has been achieved only to a limited degree in the present study; however, the observations captured activities of all residents, including those with cognitive impairments. The use of objective measurements such as actigraphs could have enriched the current data with objective measures of sleep and activity levels and provided information about more impaired residents. On the other side, the majority of those living in RCFs in Sweden are women aged 80 or older [10], which was mirrored by the study sample. Another aspect of trustworthiness is voice. It is important to make the voices and experiences of the participants accessible. This has been done through the quotes and field notes, illustrating a link between the data and the interpretation as well as giving insight to the lives and worlds of the participants. This also enhances evaluation of the content in each category [37].

Data were collected in the autumn/winter, which could have had an impact on the results. In the general population, less light physical activity and more sedentary behaviour is reported during autumn/winter [38], possibly due to unpleasant weather and decreasing light levels.

5. Conclusion

The rhythm of the unit sets the pace of life in the RCF—that is, there is a general approach to the scheduled activities, commonly at the expense of the individual wishes of the residents. It is difficult to balance the general routines of a care setting with those of the individual. Residents who have the capacity to make decisions and transport themselves feel that their nocturnal sleep has improved since moving to the RCF. Staff need to be aware of the need for stimulating and enriching activities among residents and to empower self-determination concerning activities. Specific consideration should be given to residents with great impairments that could create difficulties communicating their wishes and moving on their own. It is not solely about being active; it is about being a part of the decision-making, being stimulated, and to have a regular rhythm of the day that promotes sleep.

Disclosure

The authors declare no conflicting interests.

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Author Contributions

Amanda Hellström responsible for data collection, leading in the analysis of data and did the drafting. The first author also participated in the conception and design of the study.

Anna Condelius contributed in the interpretation and analysis of data and revised critically on the drafting and provided intellectual content.

Ania Willman contributed in the analysis process and provided with intellectual content in the drafting process. The third author also participated in the conception and design of the study.

Cecilia Fagerström contributed in the analysis process, gave critical comments on drafting and provided with intellectual content. Cecilia Fagerström also participated in the conception and design of the study.

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