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TRADITIONAL BELIEFS AND REAL INFLUENCE OF FULL MOON DAYS ON THE BEHAVIOR OF COMMUNITY PHARMACY CUSTOMERS IN ESTONIA

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Abstract: Traditional beliefs about the influence of the moon's phases on human well-being and health remain vague in Estonia. The study hypothesized that Estonian pharmacists have noticed a periodic increase in the number of problematic pharmacy visitors, which can be associated with full moon days (3 days before and after). The observational study was conducted in 22 community pharmacies in Estonia (11 in standard and 11 in blind group), a total of 76 pharmacists filled out an observation diary daily for 10 months. Additionally, a questionnaire was used for 400 randomly selected employees of pharmacies. During the full moon period, the number of conflicts in the community pharmacies increased by 2.7 in the standard group and 3 times in the blind group ($p<0.01$). Pharmacists' opinions about the full moon's effect on the behavior of pharmacy visitors and themselves are described. Also, the sales of medicines for nervous system disorders increase on full moon days. Sensitive customers believe in the influence of the full moon and experience changes thanks to autosuggestion. The behavior of visitors is emotionally more unstable, with an increased level of anxiety. There is a need for further research on the impact of moon phases on behavioral aspects when providing medical and pharmaceutical care.

Keywords: folklore, conflict, pharmacist, customer, moon phases

HISTORICAL BACKGROUND OF ASTROLOGY IN ESTONIA

Humanity has looked for parallels between heavenly bodies and earthly life since ancient times. In the early modern period, astrology's cultural and intellectual status changed dramatically: it came to be seen as disturbing information that was not sensible to be followed, was confusing and untrue, or was attributed the characteristics of superstition. Astrology was marginalized throughout Europe and beyond, including in the settlements and colonies. At the very end of the eighteenth century, G. A. Oldekop was the first who left out the astrological table in the calendars published by M. G. Grenzius (Annus 2000). In the early 1840s, the Learned Estonian Society (Gelehrte Estnische Gesellschaft) demanded that calendars no longer publish astrological information about the phases of the moon or indicate suitable sowing times, suitable periods for ablation and other medical procedures, and this became a rule. Interestingly, we find references to astrology in a reader for students (Jakobson 1867), which evidences that it

was still considered important information that deserved to be mentioned in the textbook. This indirectly indicates that astrology was cultivated among intellectuals and was not marginalized. At the same time, we find only a few reports about the moon's phases (Wiedemann 1876), two of which are related to mental disorders, in the accounts reflecting the worldview and beliefs of Estonians, compiled by Baltic Germans in the nineteenth century. The correspondence and analogy of creation between a celestial body or a certain configuration of celestial phenomena and an earthly event could not be lost without a trace. What is the question? Was this not common in the folk practice of the time? Or did those looking for the data not ask about them or write down these reports?

Looking over the results of the massive collection of folklore and religion initiated by Jakob Hurt (1839–1907) in the middle of the nineteenth century and written down by Estonians themselves (he was interested in folk astronomy; 113,000 pages of texts were sent to him), the paucity of information in his and other nineteenth-century collections becomes apparent. There is less data than in the thirties of the twentieth century, the time of urbanization and modernization. However, we see the same tendency in the writings of mythology and other religious phenomena. So there is one strong reason why the clarifying questions and varied collection methodology brought the data to the fore. For such an appearance these beliefs and practices must have existed a century earlier. At the beginning of the twentieth century, many different new teachings, esoteric hobbies, magicians, soothsayers and astrologers moved to the cities and spread from there to the countryside; also, some of the knowledge was presented in the press.

A substantive analysis of the existing information indicates that, although it is a contradictory system (as is common with oral information), the astrological information of the contemporary calendar and the behavioral structures of economic activity are related. A ritual and symbolic aspect could come into play in medicine. The creation of several analogies of both heavenly and earthly phenomena, human life and heavenly phenomena, trees used in the ritual and human life, etc., are evident, as we can see in the example presented by F. J. Wiedemann:

> *If you want to know if a weak child will survive, on Thursday night, under the light of the full moon, pull him from west to east through a hole previously drilled in the trunk of an oak tree, leaving there the clothes and some mercury …, and quickly move away without looking back. If the tree continues to grow well, the child will also survive, but if the tree dies after a while, the child will soon die…* (Wiedemann 1876: XVII)

There is no reason to doubt that in the twentieth century astrology continued in the city and certainly in the countryside. During the Soviet period (after the Second World War until the 1990s), the connection of the moon phases with various fields of human activity was a well-known topic; people were happy to talk about it to collectors of lore. In the late 1980s, regular horoscopes began to appear in the media and later on in social media; astrology spokespeople and experts also took the floor. In addition to entertainment (this is how the media justify their publishing tactics), for example, sowing calendars aimed at practical activities found a place in the media. At the same time, interest in the history of astrology also rose in European academic circles, especially among historians of science. It is probably a cyclical development, where ups and downs alternate; we can see this in several cultural phenomena.

MOON PHASES AND HUMAN HEALTH IN LOCAL BELIEFS

For a long time, it has been believed that moon phases exert influence on human somatic diseases. The story is much more complicated with knowledge of the relationship between the moon and mental problems, which include mood swings, depression, challenging behavior or more serious mental illnesses. Folk beliefs argue that fright and fear cause many diseases, so they were recommended to be avoided, and countermeasures and medicines were also used against them. According to the general belief, it is women who startle easily, as a result of which they have more diseases.

There were also direct connections: according to a widely known belief in the world, a person began to sleepwalk, i.e., fell ill with moonshine (became moonstruck) when the full moon shone on top of the head while sleeping. The disease (formerly called lunacy) is also on the international list of psychiatric disorders and there is no definitive scientific explanation for it. A close class of nocturnal sleep disorders is the nightmare phenomenon, which nowadays is associated with sleep apnea, but whose religious explanations are considerably more mystical and also include moonlight. The sphere of mental disorders is overshadowed by an unwritten norm, according to which it was not natural to talk about serious illnesses outside the very close circle of the home. This was even the case for casual workers and servants, for whom mental disorders and certain accidents were a taboo subject that was not discussed. Other reasons also contributed to this: depression and many other conditions could not be diagnosed but were characterized by sadness, indifference, lethargy, grumpiness, emaciation, etc. This list also includes references to several possible diagnoses.

When looking for reasons for mental disorders, mistakes against communal moral norms prevail, ranging from digging or sitting on the ground at the wrong time, to beating and torturing baby birds or animals, not to mention relationships with people who had gone crazy. We find the influence of the moon, sunrise and sunset, and the stars in the more archaic layers of explanations, which concern diseases affecting children from infants to two-year-olds (diarrhea, developmental disorders, so-called animal diseases[1]). These were caused by the wrong behavior of the pregnant woman with animals or being frightened by the sight of them; there were also other related explanations. They were tried to be eliminated with small rituals and reconciliations, treated with shock therapy, scaring, massage, etc. Severe forms were considered hopeless and were generally not treated; the sick were left to their own devices.

A more colorful picture is seen in the treatment of diseases in which, depending on the healer, the moon phase could be important even for sprained joints, broken bones, etc., but was widely used to ward off insects, pests, and wild animals, and also to influence economic activities and success (Kõiva 2011). Here the full effect of the moon phases is used to a large extent as based on analogies: the waxing moon grows (suitable neither for treating tumors, nor for crops, the edible part of which grows underground), the waning moon shrinks (suitable time for treating tumors), the moon and the sun in the sky at the same time – a dangerous time, the full moon is suitable for many activities, the lunar break is rather a dangerous time (Kuperjanov 2004).

However, there is still scant folk religious material in the archives, and it does not in any way reflect modern observations of how the full moon makes people with strange views and behavior move; drops of water on the window in the moonlight are the best remedy for this.

Sarv (2015) states in his popular science book *Kuu* (The Moon) that women's menstrual cycle has the same duration as the lunar cycle (28–29 days). In Estonian, this monthly period is called *kuupuhastus* (lit. moon cleaning). It is interesting to note that other religious associations exist between the moon and bleeding. Relating good health and effective treatments to lunar phases is also popular in Latvia, where many believe that during the full moon any bleeding is hard to stop, and the effects of remedies during this period are intense (Balode & Kārkliņš 2005).

In beliefs, moon phases are also associated with plants, including the choice of time to collect them. In connection with the collection of edible and medicinal plants and the phases of the moon, there is a fairly common belief in Estonia that aerial plant parts (flowers, leaves, fruits) should be gathered during the full moon, but underground parts before the new moon. It is believed that after

the appearance of a new moon, plant juices start moving from roots to the top, bringing the plant's 'energy' with them (Sarv 2015).

Raal et al. (2018) studied the most common modern beliefs regarding medicinal plants in Estonia among 1,205 randomly selected subjects. A quarter of the respondents strongly agreed with the statement that herbs' effect depends on the moon's phase at the time they were collected, and 26% agreed slightly. 19% disagreed with the claim slightly, and 30% disagreed completely. The respondents' higher education correlated with higher disagreement rates with the presented claim, while higher age correlated with higher agreement rates (Raal & Relve & Kõivupuu 2018).

We are convinced that this study on the influence of the moon phases on the behavior of pharmacy visitors reveals valuable information about today's explanatory models of beliefs and social behavior and raises a serious problem. Can we rely solely on old and archaic reports, or do we have to add more extensive modern data sets and analyses to social, economic, health-related and cultural phenomena? The changing world is characterized by the transformation of worldview attitudes and, thus, the actualization of historical explanatory models in combination with scientific research. For this, it is necessary to organize well-designed experimental studies.

INTRODUCTION TO EXPERIMENTAL STUDY

The requirements for community pharmacies suggested by Good Pharmacy Practice are being tightened. According to that, each pharmacy must operate in a patient-oriented space that will allow the visitors to fully meet their needs for pharmaceutical care. The pharmacists' performance of their professional duties in the patient-oriented space of pharmacies can be full of conflict situations with different factors, accompanied also by temporary periodic increases in anxiety and depression. Conflicts are also one of the reasons why pharmacists are burned out at work; many healthcare professionals find it difficult to accept unfounded criticism (Peeples 2019). The health professionals are under constant stress, and if we add conflicts and unfounded criticism to this, it is difficult for many specialists to continue their work (Parikh 2019).

In most cases, conflicts between people are mainly investigated by studying psychological causes. The environmental variability, changing seasons, moon phases, solar activity, etc., can hypothetically play a role in the occurrence of conflicts. It is known that some of these factors significantly affect the behavior of animals, in particular birds (Slettebak 2012; Portugal et al. 2019). For decades, researchers from all over the world have been trying to explain the

impact of the phase of the moon on human behavioral aspects. For example, famous psychiatrist Thomas Weir studied changes in the behavior of patients suffering from bipolar disorder during different phases of the moon. Scientists in a number of experiments have been able to demonstrate the cyclicity of patients' bipolar disorders; in this cyclicity, the states of depression and mania regularly alternated depending on the phases of the moon.[2]

Historically, there has been an understanding that the phases of the moon also affect people's behavior. Raison et al. (1999) argue that the belief that the lunar cycle is associated with the onset and severity of psychiatric symptoms has persisted since the Middle Ages. The authors conclude that the bulk of lunar research has found no relationship between lunar activity and psychiatric presentations to emergency departments.

Some studies claim that human behavior is related to the moon's phases. For example, Welsh (2016) has found that the duration of children's sleep depends on the phases of the moon. According to well-known Australian forensic experts Sheldon and Prunckun (2017), police officers claim that the effect of the full moon on human behavior is significant.

Studies of the relationship between human behavior and the phases of the moon were also conducted at the Maryland Toxicology Centre in the USA, by analyzing 22,079 telephone calls (Oderda & Klein-Schwartz 1983). Thirteen monthly cycles were studied, and it was concluded that most calls, including those related to accidental poisonings, were made during the full moon period. Most accidental poisonings were reported during the full moon, while suicide attempts and substance abuse were reported during the new moon period. Parmar et al. (2014) have found that significantly fewer patients with anxiety disorders presented to the psychiatric emergency department during the 12-hour and 24-hour full moon models, but for the 24-hour model, significantly more patients presented with a diagnosis of personality disorders. Patients also presented with more urgent triage scores during this period.

The possible influence of the moon phases on the behavior of pharmacy visitors has not been studied so far. The aim of the research was to analyze the influence of the moon phases on the frequency of conflicts between pharmacists and pharmacy visitors.

MATERIALS AND METHODS

The study was based on the hypothesis that Estonian pharmacists have observed a periodic increase in the number of conflicted pharmacy visitors, which they associate with full moon dates. Therefore, we tried to find out whether increase

in the frequency of conflicts in the pharmacy during the phase of the full moon is statistically provable or it is a prejudice without scientific proof.

The observational study of pharmacy visitors was conducted in 22 community pharmacies in Estonia, of which 11 (standard group) knew the connection between the survey and lunar phases and 11 (blind group) were not aware of the focus of the study. Each pharmacy received a number from 1 to 11 as a random code, and the authors did not know which pharmacies they were working with when analyzing the data. Confidentiality also ensured that pharmacies of various chains participated in the study. Each pharmacy received a cover letter indicating the conditions of the written study and the criteria for recording the observation data. A total of 76 pharmacy workers (39 in standard and 37 in blind group) kept a research diary, recording the number of conflicts per day. The duration of the study was 303 days (from 1 November 2018 to 31 August 2019), of which 233 were "usual days" and 70 were full moon creation days with the preceding and following three days (= full moon days). Full moon periods were obtained from the dateandtime.com resource. In the diaries of pharmacy workers of the standard group the full moon day and the three previous and subsequent days were marked in color, while in the diaries of pharmacy workers of the blind group, the full moon periods were not marked, and they did not know that the researcher was interested in the possible influence of the moon phases on the occurrence of conflicts.

Pharmacists participating in the study were offered a 10-point scale to determine the level of conflict with pharmacy visitors: 1 – good-natured, smiling, laudatory; 2 – polite and aware of own desires; 3 – pleasant to communicate with; 4 – calm and firm, but reserved in behavior; 5 – neutral; 6 – a little tense, but holds on and maintains control within the bounds of politeness; 7 – slightly upset and demonstrating it; 8 – rude, arrogant; 9 – attacks, provokes conflicts, threatens to sue; 10 – raises voice, offensive and otherwise aggressive.

Points 7–10 were considered conflict situations, in the case of which the pharmacist participating in the study made a cross in the research diary. The total number of pharmacy visitors was also recorded in a special table every day.

Questionnaire for employees of pharmacies

In addition, a survey of 400 randomly selected employees of pharmacies was conducted, using an electronic questionnaire developed by us; it was sent out through eFormular.com and 20 questions were asked. The first block involved collecting general data: gender, age, position, work experience, and the number of pharmacy visitors per day. The second one was devoted to conflicts, to explain

their frequency, periodicity, and etiology. In the last block, the authors tried to find out what pharmacy workers themselves thought about the full moon period and whether they believed it was related to the number of conflicts. Then there were questions about whether the number of conflicts changed during the full moon period and how they occurred. It was also necessary to clarify whether the purchase of certain medications increased during the full moon period, since this period was associated with mental health disorders. Also, a public question was opened for comments.

Statistics

To confirm the hypothesis, it was investigated whether there was a difference between the results of the standard group and the blind group and whether this difference was statistically significant or not. The experimental statistical data were processed using the Microsoft Office Excel software. The method of analysis was the Student t-test using the TINV mathematical function. The analysis was based on the sample size and the number of users.

RESULTS

Study of pharmacy visitors

The average number of pharmacy visits per month was similar in the standard group (54,174–68,263) and in the blind group (54,132–61,041) from November to August. The average number of visitors in the standard group was 183 people per day and in the blind group – 175 people per day. Knowing this, we calculated the percentage of conflicting customers from all visitors per day. In the standard group, it was 3.8±0.4% of conflicting visitors on usual days and 10.2±1.4% on full moon days. In the blind group, the proportion of conflicting visitors from all customers was 1.9±0.3% on usual days and 5.6 ±1.1% on full moon days. Using the TINV function, it was found that using a 99% confidence interval ($p<0.01$), the average number of conflicting patients in the standard group was 7.0±0.8 on usual days and 18.6 ±2.5 on full moon days. In the blind group, the average number of visitors on usual days was 3.3±0.5, and on full moon days – 9.9 ±2.0 (Fig. 1).

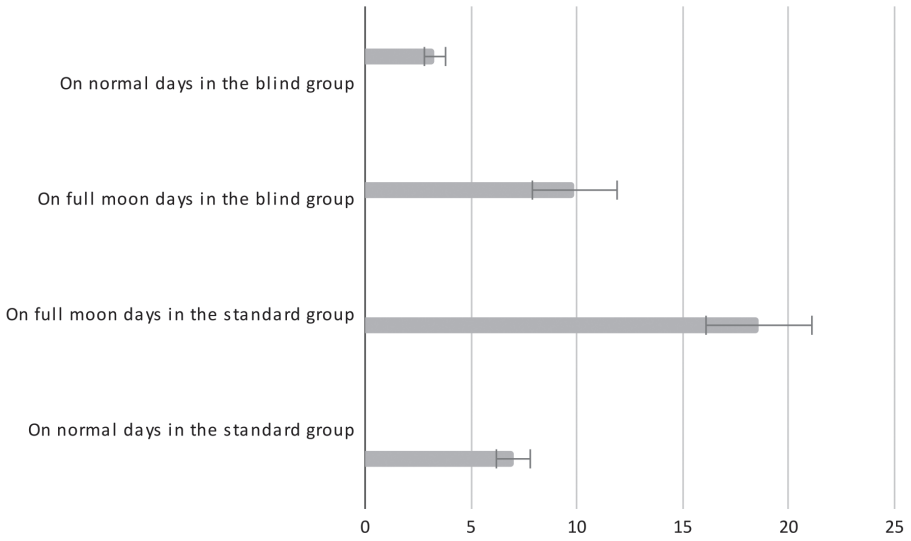

Figure 1. *The average number of conflicts per day on normal and full moon days in the standard and blind group, according to pharmacists who participated in the observational study.*

Study of pharmacy employees

General background of respondents

According to the results of the survey of 400 pharmacy employees in Estonia, they were segmented by demographic criteria. Most respondents were women (93%), which indicated the popularity of the profession of pharmacist among the females of the country. Most respondents had a higher professional pharmaceutical education (pharmacists, 53.2%), another bigger group were graduates of medical schools (pharmacy assistants, 39.8%) and a minority were persons without special pharmaceutical education (customer service personnel, 7%). By age, the largest part of respondents were experts over the age of 50 (28.5%); 33.3% of respondents had been working in a pharmacy for more than 20 years.

Periods of conflict in pharmacies

Pharmacy workers drew attention to the number of conflict situations in pharmacies depending on individual natural and socio-economic factors (Fig. 2). Thus, most respondents (41.5%) noted that the number of conflict situations in pharmacies increased on full moon days when a significant number of problem patients visited the pharmacy. The number of problem patients in the pharmacy increased by 33.3% on paydays or pension days, and by 26% on the days of a magnetic storm. Thus, many of those pharmacists who did not participate in the observation diary study also noticed an increase in the number of conflicted patients on full moon dates. This means that the observed experience is broad-based, which increases the reliability of the conclusion.

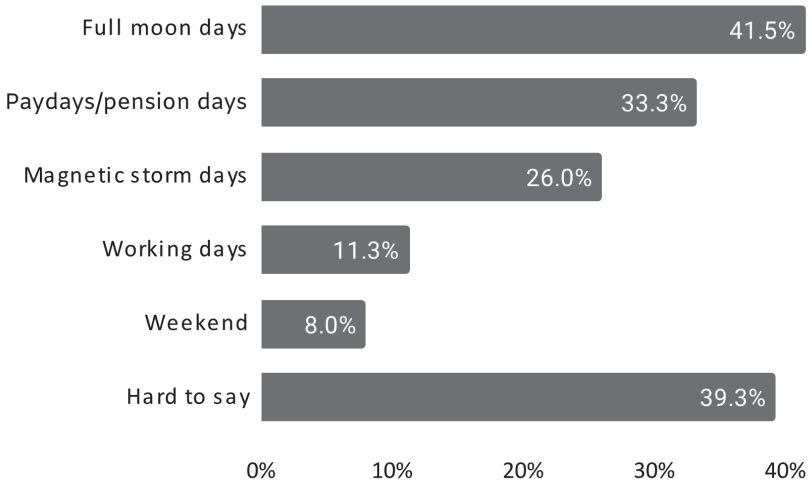

Figure 2. *Days when the number of conflicted pharmacy visitors increases according to the experience of pharmacists (%).*

Pharmacists' opinions about the effect of the full moon

Next, we investigated what pharmacy employees think about the possible influence of the full moon on the development of conflicts in pharmacies, and whether and how this period affects others and themselves. A total of 51.8%

of the respondents had noticed that the number of conflicting patients in the pharmacy increases during the full moon. At the same time, 21.8% of respondents did not notice such an increase, and 26.5% could not say anything about this issue. 60.8% of pharmacists noted the significant impact of the full moon on people's mental health. Therefore, a third of the respondents (32.3%) watched the approach of the full moon on the calendar and in the sky and were ready for a possible escalation of conflicts in the pharmacy. Only 13% of the surveyed pharmacists were skeptical about the effect of the full moon on the behavior of pharmacy visitors.

Causes of conflicts in the pharmacy

The commonest cause for conflict situations was problems with inaccurate prescriptions written by doctors (67%; Table 1). More typical errors included a prescription containing a wrong medicine, a wrong dosage, an unreliable discount percentage, etc. Some pharmacy visitors believed that if there was a problem with the prescription and the medication could not be bought immediately, then the pharmacy employee was to blame. Very often, in this case, the patient's emotional negativity, which may be due to their anxiety or depressive state, is transferred to the pharmacist and causes a conflict situation.

Table 1. *Causes of conflicts in pharmacies of Estonia according to the surveyed pharmacists*

Problems	**Mentioned by respondents, %**
Inaccurate prescriptions	67
Prices of medicines	61
Availability of products	39
Personal biases	34
Attempts to deceive the pharmacist	20
Behavior of a drug and alcohol-dependent pharmacy visitor	18
Service provided at the pharmacy	16
Types of payment	8
Other	6

A significant part of the employees (61%) indicated that conflicts arose when the patient was not satisfied with the prices of the drugs. The price increase of certain drug groups almost always causes a negative attitude among customers, which in turn affects the emotional state of all participants in the drug supply

system. Some clients cannot suppress this emotion, probably more often in the case of various affective disorders. The frequency of conflicts was also influenced by the availability of medicines in pharmacies. Thus, 39% of experts noted that the conflict increased when pharmacy visitors were not satisfied with the selection of pharmaceutical products; for example, when the pharmacy did not have a specific drug that the patient had seen in an advertisement or that had been recommended by neighbors, relatives, or acquaintances. In some cases, when medicines were not available in the pharmacy, the visitors considered it the pharmacist's fault.

A third of the surveyed pharmacy employees (34%) cited personal prejudices of customers as the cause of conflicts. For example, some visitors had a conflict with a pharmacist with a tattoo because it was considered unacceptable in the pharmacy, which affected their personal behavior regarding professional advice. Some of the visitors think that the pharmacy's activities are aimed only at business and that the pharmacist's goal is to make money off the sick person. These patients do not understand the importance of quality pharmaceutical care and provoke conflicts. Conflicts in pharmacies are also caused by visitors' attempts to steal (19.5%) or manipulate cash or the quantity of medicinal products (19.5%). 17.7% of the surveyed respondents considered the cause of conflicts arising in pharmacies to be the behavior of antisocial people and those suffering from drug and alcohol addiction. 16.2% of the surveyed pharmacists had experienced conflicts because the visitors were not satisfied with the quality of the service.

We investigated whether the shopping habits of pharmacy visitors can also change on the days of the full moon. Almost half of the respondents (44.5%) observed an increase in sales of specific drugs or food supplements during the full moon period (Fig. 3). A fifth (19.8%) of the surveyed pharmacists observed a connection between the full moon period and an increase in the purchase of certain pharmaceutical products, especially in relation to drugs affecting the central nervous system and dietary supplements (Fig. 3). According to the majority (74–77%) of the respondents who observed changes, the need for sleeping pills and sedatives increased on full moon days, but antipsychotics, antidepressants, and herbal preparations with a calming effect were also bought more (33–43%).

Finally, we asked whether the respondents had noticed that their physical and mental well-being changed during the full moon. Half (49%) of the pharmacy workers did not notice such changes, 28.6% of respondents felt changes, and 22.5% did not say anything. Pharmacists who answered "yes" most often had difficulty falling asleep as well as sleep disturbances during the full moon period (73%), followed by nervousness (59.1%), mood swings (53.9%), irritability (41.7%), weakness (36.5 %), dizziness (7.0%), changes in blood pressure (6.1%), panic attacks (4.3%), increased appetite (0.9%), etc. Therefore, more sensitive

servants experience changes in the functioning of the central nervous system during the days of the full moon. This supports the hypothesis that the same can happen to their customers.

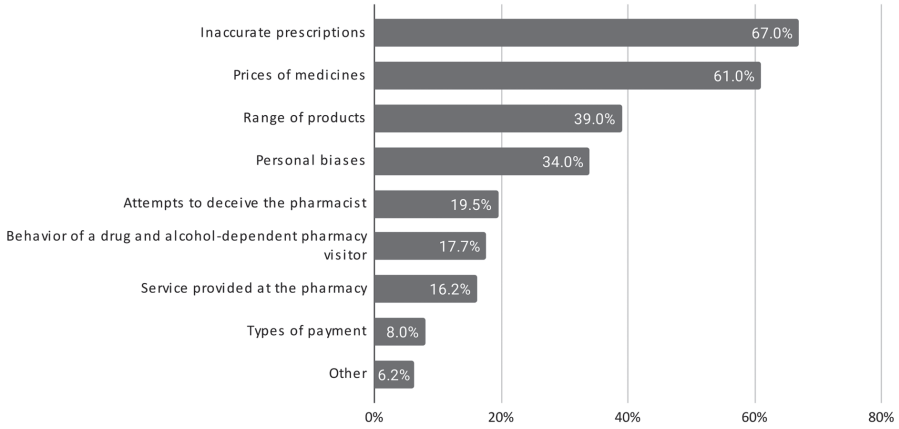

Figure 3. *The causes of conflicts between pharmacy employees and pharmacy customers, according to pharmacists (%) who participated in the observational study.*

DISCUSSION OF EXPERIMENTAL RESULTS

The effects of moon phases on humans and animals have been studied before, but not thoroughly. A retrospective content analysis of scientific publications revealed that research into the influence of moon phases on animal behavior was popular. Facts are known about the existence of a connection between the phases of the moon and the life cycle of animals and etiological behavior. For example, it was determined that the reproductive cycle of animals depended on the phases of the moon. This association was found in fish, birds, amphibians, and mammals (Ikegami et al. 2014). Nishimura et al. (2019) investigated the effect of moon phases on the behavior of *Pogona vitticeps* lizards, showing that lizards' activity increased during the periods of full moon in both standard and blind groups.

Brazilian scientists conducted a study on the behavior of pack wolves on a full moon night. It was found that animal activity decreased on the night of the full moon: the nights are less dark than usual, and this makes the animals visible. If the animals maintained their normal activity, they would be very

easy food for predators. The activity of predators also decreases because there are no animals to feed on. Wolves have also been found to conserve their energy during the full moon. On average, wolves walked 1.88 km less on a full moon night than during a new moon period (Sábato et al. 2006). However, another study (Theuerkauf et al. 2003) found that wolves killed 1.8 times more animals on a full moon night than on a normal night because the prey becomes visible to predators. There is also a relationship between the life cycle of oysters (*Crassostrea gigas*) and the phases of the moon. The oysters were put in a dark place filled with seawater and monitored as they opened. The researchers concluded that even in the dark, oysters felt the influence of the phases of the moon and used them to synchronize their behavior (Payton & Tran 2019).

According to the data presented in a review article (Zimecki 2006), a significant number of human biological and behavioral processes can be associated with the phases of the moon. For example, the menstrual cycle is associated with the phases of the moon – the largest part of menstruation (28.3%) falls on the phase of the new moon. Individual researchers have found that more children are born in France between the lunar phases of the moon creation and the new moon; the number of accidents is the highest two days before the full moon; the highest number of crimes is observed during the full moon phase. There is also a definite link between the moon phases and suicides. Most often, suicide attempts are made during the new moon period. The cyclical nature of the immune response also correlates with the phases of the moon (Payton & Tran 2019).

In Estonia, specialists of the Road Administration together with the Institute of Informatics of the Tallinn Technical University conducted a study that revealed a relationship between the phases of the moon and road accidents. Although there was a weak correlation between the results of the study, the authors emphasized the need for further research. Based on the results of the study, the largest number of road accidents occurred during the new moon phase, but the next most dangerous period was during the full moon days. The difference in the number of road accidents on safe and dangerous days was six times. The number of accidents during the full moon was 2.2% higher than the average in other phases of the moon (Võhandu & Kirt & Raidna 2005). A study by Redelmeier and Shafir (2017) found that more fatal accidents occurred in the USA during the full moon period.

The analysis of the behavior of pharmacy visitors and the questionnaire survey of pharmacists have shown a statistically reliable relationship in the behavior of pharmacy visitors depending on the moon phase. The number of conflict situations in the pharmacy during the full moon days is greater than on usual days. In both the standard group and the blind group, there was a sig-

nificant statistical difference between the full moon days and ordinary days. As expected, in the standard group, where people knew what the study was about, the number of reported conflicts was numerically higher than in the blind group. This suggests that people have preconceived notions about the phases of the moon and certain expectations about how other people's behavior will change. Based on their experience, more than half of the pharmacy employees surveyed say that during the full moon, the frequency of conflicts with pharmacy visitors increases. It is also interesting that during the full moon period sales of medicines of certain pharmacotherapeutic groups increase, and there is an increase in sales of medicines used for nervous system disorders.

It is difficult to comment on the impact of the diagnosis of anxiety and depression on the frequency of conflicts in the pharmacy, but several respondents described the conflict situations that arose as a "madhouse". However, we can see from the survey that the question "Do the same conflicted patients visit the pharmacy repeatedly?" was answered as "yes" or "rather yes" by nearly 2/3 (64.8%) of the respondents (26.3 and 38.5%, respectively; Fig. 4). It is denied or rather denied by a clear minority (15.0 and 13.0%, respectively).

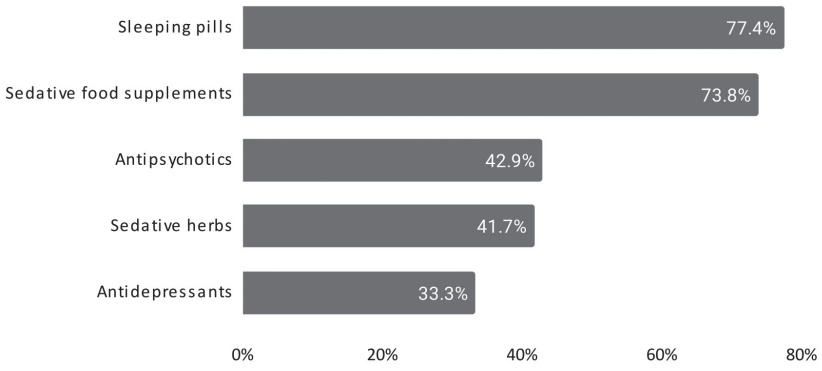

Figure 4. *According to pharmacists (%), sales of these preparations increase on full moon days.*

Most likely, during the full moon, people become more emotional and lose the ability to control their feelings and actions, and this leads to more frequent conflict situations. During the full moon, a significant number of people experience insomnia and a general increase in the activity of the central nervous system. Although, historically, attempts have been made to explain the increase in insomnia

with more light during the full moon (Lilienfeld & Arkowitz 2009), it cannot be taken seriously today, because people can make their rooms completely dark.

The possible effect of the full moon on the human psyche has been determined in several studies (Welsh 2016; Sheldon & Prunckun 2017; Oderda & Klein-Schwartz 1983; Zimecki 2006; Võhandu & Kirt & Raidna 2005; Redelmeier & Shafir 2017; Lilienfeld & Arkowitz 2009; Britt 2016). It is concluded that most reliable studies find no connection with moon phases, while some have proved inconclusive, and many that purported to reveal connections turned out to involve flawed methods or have never been reproduced. We argue that more sensitive people believe in the influence of the full moon and experience changes thanks to autosuggestion. The moon itself does not directly affect people's psyche and behavior.

The authors of the study believe that further research is needed on the influence of the moon phases on the social and behavioral aspects of medical and pharmaceutical care delivery, as well as on the effects of anxiety and depression. In our opinion, it is also recommended to carry out biochemical studies to determine the main mechanism of the effect of the lunar phases on living organisms. Hopefully, pharmacists can use the results of our study to predict and resolve conflicts in the pharmacy to provide quality pharmaceutical care.

CONCLUSIONS

There is still scant folk religious material in the folklore archives in Estonia. Therefore, traditional beliefs about the influence of the phases of the moon on human well-being and health remain vague.

Our experimental study proved that the number of conflicted pharmacy visitors increases on full moon days. The most important question is what could be the effect of the full moon itself here. The answer is that the moon itself does not directly affect people's psyche and, through it, their behavior. More sensitive people believe in the possible influence of the full moon and experience changes in themselves thanks to autosuggestion.

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NOTES

[1] Such diseases were related to people's behavior towards animals (unfair punishing, beating) or startling when seeing an animal, which resulted in an infant's disease. According to the symptoms and causes they were called dog, wolf, etc. diseases.

[2] See https://sci314.com/news/314-luna-vliyaet-na-nashe-nastroenie-i-mozhet-dazhe-vyzvat-bipolyarnoe-rasstrojstvo 2022, last accessed on 28 May 2024.

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