SUMMARY:

**Purpose:** The aim of the report is to study the incidence rate among children attending crèches on the territory of the municipality of Pleven, defining the reasons and suggesting measures for its decrease.

**Materials and methods:** The study was conducted between March 2015 and August 2017. A total of 533 people (83 nurses working in crèches and creche groups in integrated childcare facilities (ICF) on the territory of the Pleven municipality; 360 parents whose children attended children’s establishments and 90 newly admitted children) were included.

**Used means:** Two types of survey questionnaires were conducted on the two groups - nurses and parents. There had been conducted over a period of one year an outdoor overt panel observation in natural conditions of 90 new children in “Happy Childhood”, “Asen Halachev” and “Chaika” crèches. Survey data was processed with STATGRAPHICS software packages; SPSS 19 and EXCEL for Windows.

**Results:** There has been established a high incidence rate of children attending crèches in Pleven municipality. According to parents and health care professionals, the major causes of that incidence rate are lack of sustained immunity, contact with many children, and in the opinion of some - poor control over morning admission. An insufficiently effective morning filter and nurses indecisiveness on decision making, as well as on taking adequate measures related to children’s health.

**Conclusion:** The study found a high incidence rate among children attending crèches on the territory of the Pleven municipality.

**Keywords:** Children attending crèches, nurses working in crèches, health care.

INTRODUCTION

In Bulgaria, a large proportion of children in the period of early childhood are raised and educated in crèches. These are health-care establishments designed to assist parents in raising their children. Crèches main mission is to strengthen, preserve and stimulate child health. The activities that take place in them are aimed at the harmonious development of the personality in the health and social aspects. Creches are part of the healthcare system [1, 2, 3, 4]. It is no secret that in our country, healthcare faces a number of challenges and issues, which inevitably leads to the involvement of this unit as well. The problems are various - organizational, healthcare-related, and so on [4]. In this scientific report, we mainly address the healthcare issues and, above all, the incidence rate of children attending crèches, as well as the problems and measures are taken to reduce it.

The high incidence rate in early childhood, especially when a child attends a child care facility, is widely accepted as normal. The child’s organism has not yet grown. The time during which the child adapts to the conditions of the new environment (in crèches) is a risk one for their health. It requires that the body begin functioning from the “sterile” family environment in an environment where conditions and requirements are different. While these incidence arguments are true and scientifically valid [5, 6], the presence of diseases among children should not be ignored and underestimated. Efforts of staff in crèches should focus on maximizing the reduction of disease incidence because each illness affects the physical and mental health of infants in early childhood. It should also be remembered that the priority task of healthcare professionals is not only to promote the children’s health but also to protect it [7].

It has been shown that raising children in childcare facilities poses a risk to their health - mainly by respiratory infections [8, 9, 10, 11, 12].

PURPOSE

The aim of the report is to study the incidence rate among children attending crèches on the territory of the municipality of Pleven, defining the reasons and suggesting measures for its decrease.
MATERIALS AND METHODS:
The study was conducted between March 2015 and August 2017. A total of 533 people (83 nurses working in crèches and creche groups in integrated childcare facilities (ICF) on the territory of the Pleven municipality; 360 parents whose children attended children’s establishments and 90 newly admitted children) were included. The survey was conducted in 22 creche establishments, including 8 creches and 14 creche groups in the ICF. The survey took place in three of the creches chosen at random.

Used means: We employed a documentary method for studying the available literature, questionnaire method and observation. Two types of survey questionnaires were conducted on the two groups - nurses and parents. There had been conducted over a period of one year an outdoor overt panel observation in natural conditions of 90 new children in “Happy Childhood”, “Asen Halachev” and “Chaika” creches. Survey data was processed with STATGRAPHICS software packages; SPSS 19 and EXCEL for Windows. The results are described by tables, graphs and numerical metrics for structure, frequency, averages, correlation coefficients, and others.

RESULTS:
After reviewing the available literature, we gathered scant information on the incidence rate of children attending creches. The most likely reason for this is that in most European countries, crèches do not exist as a form of raising and educating children in early childhood. For example, in Austria [13], Germany [14], Norway [15], Slovenia, Lithuania, Latvia, the Netherlands, Denmark [16], such care is available in so-called Day Care Centers. For this reason, we partially used in our analysis surveys on the incidence rate of childhood outbreaks at such Day Care Centers.

The following groups of respondents participated in our study: 83 nurses working in crèches and creche groups in the ICF in the municipality; 360 parents whose children attend crèches and creche groups in the ICF in the Pleven municipality; 90 newly admitted to creches children.

Figure 1 presents the socio-demographic characteristics of the contingent on some basic criteria.

![Fig. 1. Socio-demographic characteristics of the surveyed persons](https://www.journal-imab-bg.org)
Parents also expressed their opinion. Nearly a third - 34.44% (n = 360) of them reported that since their children had started attending creches, the latter grew more susceptible to contracting diseases – almost on a monthly basis.

Incidence rate estimate was made on children over a one-year observation period (Figure 2).

Fig. 2. Incidence rate among observed children, according to data collected from their medical records

We found that the highest proportion was of people who were ill each month followed with a minimal difference by the proportion of people who fell ill every two weeks. Results obtained earlier were in the opinion of healthcare professionals and parents also valid.

Nurses and parents were asked to identify the causes of this high incidence rate. A high share was established - 77.11% (64) of healthcare professionals, who pointed to the main reason - the lack of sustainable immunity. Parents also expressed their opinion, with 6.67% (24) pointing to more than one reason. The underlying reasons were the weaker immunity in this age and the contact with many children. The impression was that among parents, there were also 2.22% (n = 360), for whom one of the reasons was the lack of good morning admission control (Figure 3).

Table 1. Frequency of children absent on sick leave according to data provided by nurses (n = 83)

<table>
<thead>
<tr>
<th>Number of absent children</th>
<th>1-3</th>
<th>4-8</th>
<th>&gt;8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day</td>
<td>21.69% (18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every week</td>
<td>26.51% (22)</td>
<td>2.41% (2)</td>
<td></td>
</tr>
<tr>
<td>Every two weeks</td>
<td>15.66% (13)</td>
<td>14.46% (12)</td>
<td>2.41% (2)</td>
</tr>
<tr>
<td>Once a month</td>
<td>38.55% (32)</td>
<td>18.07% (15)</td>
<td>7.23% (6)</td>
</tr>
</tbody>
</table>

Fig. 3. Main causes of incidence among children attending crèches in the opinion of nurses and parents

A little more than half - 55.42% (46) of the healthcare professionals admitted that, although rarely, the presence of children with signs of illness was present in the group. The following trend was observed: with longer work experience and lower qualification degree, the incidence of cases in which sick children were admitted in the group was growing (Figure 4 and Figure 5).

Fig. 4. Relative share of individuals (according to their length of work experience), which allow the presence of sick children in crèches

In this case, there is a significant correlation dependence (p = 0.05; r = 0.30).
Fig. 5. Percentage of individuals (according to the qualification degree), which allow the presence of sick children in creches

Moderate correlation dependence is observed (p = 0.001; r = 0.37).

A very high percentage was observed – 95.19% (79) of healthcare professionals who shared that parents also concealed and denied an existing disease. In confirmation, 61.54% (n = 273) of the parents acknowledged that they happened to take their children sick to the creches. The incidence of cases is shown in Figure. 6. What is also interesting is the share of parents - 38.46% (n = 273), who totally denied that this had happened.

Fig. 6. Frequency of cases where parents allowed themselves to take their children to creches with signs of illness.

In cases where the signs of illness occurred during the stay of the children in creches, 73.49% (61) of the nurses surveyed preferred to refer them to a check-up and request the opinion of the GP. Only 4.82% (4) of them stated they were willing to make a decision and remove the child from the group, although this is part of their duties and powers as part of filtering them out in order to protect the health of other children. The nurses, regardless of experience and degree, did not allow themselves to take decisions to remove from the groups children with manifestations of a disease process that occurred during their stay (p> 0.05; r> 0 , 3).

Only 15.83% (n = 360) of the parents reported that during their illness their child had been removed from the creche, i.e. healthcare personnel had enforced a measure to limit the spread of diseases among children. More disturbing is the fact that, according to 7.50% (n = 360), this measure is rarely used: sometimes - 1.94% (n = 360), very rarely - 1.94% (n = 360) 3.61% (n = 360). These results support the statement of the nurses surveyed that they rarely allow children with signs of disease to be present in the creches.

DISCUSSION:

According to the literature, children attending childcare facilities (daycare centres, creches, etc.) have higher rates of incidence compared to domestically grown children [5, 9, 10, 11]. GuPdeney, Grasso and Starakis (2004), following their study, found that the high incidence rate was due to weaker immunity at that age and contact with more children [17]. Respondents who participated in the survey we conducted indicated the same reasons. Such conclusions have also been reached by Mygind, Ronne, Soe and colleagues (2003). They (also there) draw attention and emphasize that the main factors that may lead to lower rates of incidence among children attending childcare facilities are the hygiene standards applied in the care institutions [6]. GuPdeney, Grasso and Starakis (2004) also recommend increased hygiene measures [17]. In creches in Bulgaria, the basic standard hygiene measure for limiting diseases among children and respectively reducing the incidence rates among them is the morning filter.

We have found that there is the presence of sick children in the creches, which is an alarming fact. This proves that the morning filter is not carried out strictly, although it is a basic measure and obligation of the nurses working in creches regulated in paragraph 2 para. 2 of Art. 10 of Ordinance No. 26 on the structure and activity of the creches and controlled by the directors of the children’s establishments and the Regional Health Inspection. Unfortunately, authors such as T. Tatyozov and V. Pruvchev (2008) proved that this problem is widespread. The same authors define it as one of the main organizational and health-related issues in creches in general [4]. Historically, data about the filter as a hygienic measure to prevent the spread of diseases among children visiting childcare facilities were discovered in the nineteenth century in France. At that time in French creches was assumed that everything that surrounded the child was a potential source of infection, which in turn required a strict filter among children [18]. This testifies that even in those years, there was an awareness of the need to take serious measures with regard to childhood morbidity. The fact is, however, that this measure in Bulgaria is underestimated, and as a result, the presence of sick children in creches is not unusual. Nurses, for their part, show timidity regarding decision-making to re-
move children with signs of illness. The organizational and management decisions related to children’s health are mainly taken by the managerial staff at the crèches. We take this fact into account as a shortcoming in the current system, as direct and constant insight into the children’s health have those people directly involved in the care of the former. The non-delegation of organizational and managerial powers testifies to a lack of trust and consequently leads to a lower quality of the offered health services. Parents are allowed to conceal or deny signs of illness. So the vicious circle closes.

It is right to look into the root of the problem - whether the cause is in the healthcare professionals, or in parents or it is a complex matter, due to a number of other factors. It is very likely that one of the reasons is in the socio-economic working conditions in our country. Although parents in Bulgaria are legally entitled to a childcare service (Article 11 of the Social Security Code / SG, SG 67/03), it is no secret that a large part of the employers exert pressure and prevent their employees from taking advantage of this right. So in practice, many of the parents in their quest to keep their jobs are forced to conceal the health problems of their children. In turn, health professionals familiar with these working conditions “turn a blind eye” to aid parents. We can not claim that it is certainly a matter of neglecting the health of children, but we do not justify the actions of either parents or nurses.

CONCLUSION:

The study found a high incidence rate among children attending creches on the territory of the Pleven municipality. We can not explicitly state the reasons even though the results we obtained match the results obtained by other authors. Our study has identified some major issues that we think are also relevant to the incidence rates among children attending crèches.

The main problems related to the incidence rate and the measures for its reduction were as follows:

- insufficient effectiveness of the morning filter
- timidity on the part of nurses on making decisions and taking measures related to children’s health.

The insufficiently effective morning filter, as well as the inadequate application of restrictive measures with regard to the spread of diseases among children in creches, coupled with the parents’ behaviour that allows them to keep their children sick in childcare facilities, are only a few of the reasons. This, in turn, is an obstacle to the implementation of the main mission of crèches in Bulgaria - preserving, strengthening and stimulating health in early childhood.

It should not be forgotten that the filter is a serious measure for the prevention of childhood illnesses, as well as the fact that any illness at this age affects their physical and nerve-psychological development.

Conflict of interest:

There is no additional financing or conflict of interest at the realization if this scientific work. The scientific work has been presented to the Scientific Ethics Committee on February 02, 2015, which gave its opinion with an order of the Rector of Medical University - Pleven (No. 344 - 20.02.2015).

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DOI: https://doi.org/10.5272/jimab.2019254.2769

Received: 25/03/2019; Published online: 11/11/2019

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