

Factors associated with non-attendance at pediatric allergy clinics

Dreier J, Goldbart A, Hershkovich J, Vardy DA, Cohen AD. Factors associated with non-attendance at pediatric allergy clinics.

Pediatr Allergy Immunol 2008.

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Non-attendance for scheduled appointments is common in many medical specialties. However, there are no published reports on non-attendance in pediatric allergy clinics. We investigated the factors for non-attendance in pediatric allergy patients. We assessed the effects of age, gender, ethnic origin, waiting time for an appointment and the timing of the appointment on non-attendance proportions. Chi-square tests were used to analyze statistically significant differences of categorical variables. Logistic regression models were used for multivariate analyses. A total of 442 visits in a 21-month period were included in the study. The overall proportion of non-attendance at the pediatric allergy clinic was 33.0%. Jewish rural patients had 19.4% non-attendance; Jewish urban patients had 35.6% non-attendance; and Bedouin patients had 57.1% non-attendance ($p < 0.001$). Non-attendance was higher in spring and winter (43.5% and 36.7%, respectively) than in summer and autumn (26.9% and 26.5%, respectively) ($p = 0.016$). Non-attendance was not significantly influenced by gender, age, hour of the appointment or waiting time for the appointment. A multivariate logistic regression model demonstrated that the ethnic origin of the patients and the season of the year were significantly associated with non-attendance. We conclude that in children attending allergy clinics, factors that determine non-attendance include the ethnic origin of the patients and the season of the year.

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Key words: non-attendance; no-show; healthcare management; allergy

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Accepted 30 October 2007

Non-attendance (failure to attend clinic appointments) is a universal problem in the management of pediatric clinics, with rates ranging from 15% to 30%. Non-attendance leads to a waste of medical resources, as physicians are not reimbursed for these cancelled appointments (1–4).

Factors that influence non-attendance rates include aspects which relate to the disease (e.g., chronic vs. acute disease), aspects related to the patients (e.g., forgetfulness), demographic and socioeconomic aspects, office accessibility and aspects related to the health-care provider (e.g., waiting time for an appointment) (5–13). When interviewed, patients state various barriers to appointment attendance: emotional barriers, perceived disrespect of their beliefs and time by the health-care system, and distrust and lack of understanding of the scheduling system (14).

In previous studies, we assessed the factors that determine non-attendance in dermatology and pediatric otolaryngology clinics. It was observed that the waiting time for the appointment and the timing of appointment during the day were significantly associated with non-attendance. The longer the waiting time for the appointment was, the higher were the non-attendance rates (15, 16). A literature search failed to reveal studies on non-attendance in pediatric allergy clinics. In the current study, we investigated the factors that determine non-attendance in a pediatric allergy clinic.

Methods

The study was conducted in a pediatric allergy clinic in the southern district of Clalit Health

Services, the largest health-maintaining organization in Israel. Subjects under the age of 18 yr were eligible to enter the study. The study included visits which were performed during the regular working hours of the clinic (Mondays, 4 PM–7 PM). All subjects paid for their office visit according to the National Health Insurance Law a fixed co-payment fee of 12 NIS (approximately 3 US\$), which was valid for new and repeated visits for a single calendar quartile.

Visits to the pediatric allergy clinic were obtained from a computer-generated list of all scheduled appointments during a 21-month period lasting from April 1, 2003 to December 31, 2004. The list contained the patient's age, gender, origin, visit time and waiting time for an appointment for all new appointments in the clinic. The patients received a reminder of the scheduled appointment by a telephone call.

Statistical analysis

Continuous variables are shown as means $\pm$ s.d. Categorical variables are described as frequencies. Chi-square tests were used to analyze differences in categorical variables. Logistic regression models were used for multivariate analyses. p values ≤ 0.05 were considered as statistically significant.

Results

A total of 442 pediatric visits were included in the study during the 21-month period. There were 195 female (44.1%) and 247 male (55.9%) patients. The mean age was 7.8 ± 5.5 yr (range: 2 months to 18 yr).

The overall proportion of non-attendance at the pediatric allergy clinic was 33.0%. Non-attendance proportion was 31.8% in females and 34.0% in males (p value non-significant). Non-attendance was 28.7% in patients below 2 yr of age, 30.6% in patients between 2 and 6 yr, 34.7% in children between 6 and 12 yr and 33.3% in children between 12 and 18 yr, but the difference was not statistically significant.

The proportions of non-attendance varied according to the hour of the day. Non-attendance was 31.2% between 4 PM to 5 PM, 33.9% between 5 PM to 6 PM, and 37.0% between 6 PM to 7 PM, but the difference was not statistically significant.

The mean waiting time was 14.9 ± 10.1 days (range: 0–50 days). Non-attendance was 31.3% when there was a short waiting time for an appointment (1–7 days), 35.7% when there was in intermediate waiting time (7–15 days) and

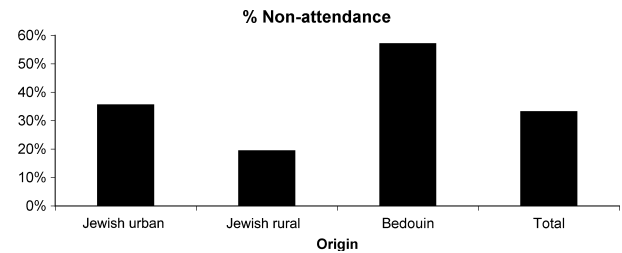


Fig. 1. Proportion of non-attendance in pediatric allergy patients according to the origin of the patients ($p < 0.001$).

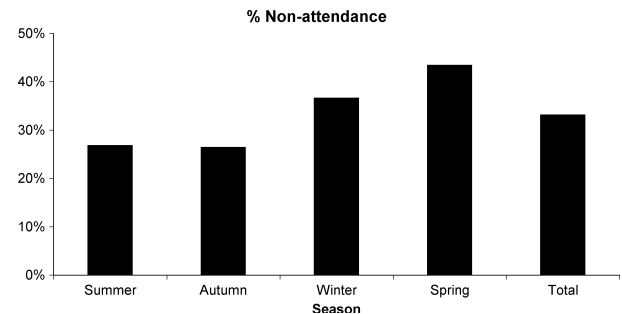


Fig. 2. Proportion of non-attendance in pediatric allergy patients according to the season ($p = 0.016$).

31.8% when there was a long waiting time (15 days and above) (p value non-significant).

Jewish rural patients had 19.4% non-attendance; Jewish urban patients had 35.6% non-attendance; and Bedouin patients had 57.1% non-attendance ($p < 0.001$) (Fig. 1). Eighty-eight (27.0%) of the consultations in the urban Jewish patients vs. 14 (15.1%) in the rural Jewish and six (28.6%) in the Bedouin sector occurred in the spring season ($p = 0.003$). Non-attendance was higher in spring and winter (43.5% and 36.7%, respectively) than in summer and autumn (26.9% and 26.5%, respectively) ($p = 0.016$) (Fig. 2). This was prominent among urban Jewish patients, but not among rural Jewish or Bedouin patients, with non-attendance rates ranging from 43% to 44% in winter and spring to 27% in autumn ($p = 0.039$).

A multivariate logistic regression model demonstrated that the ethnic origin of the patients and the season of the year were significantly associated with non-attendance (Table 1).

Discussion

Patient non-attendance is a predicament that affects all medical specialties. Failure of patients to show for scheduled appointments misuses the limited medical resources. The issue of wasted resources and lost income has become more

Table 1. Logistic regression model for factors associated with clinic non-attendance in pediatric allergy patients

	Beta	p value	OR	95% CI for OR
Jewish urban origin (vs. Jewish rural origin)	0.859	0.004	2.4	1.3–4.2
Bedouin origin (vs. Jewish rural origin)	1.840	0.001	6.3	2.2–18.2
Autumn (vs. summer)	−0.082	0.787	0.9	0.5–1.7
Winter (vs. summer)	0.636	0.039	1.9	1.0–3.5
Spring (vs. summer)	0.657	0.025	1.9	1.1–3.4
Age	0.017	0.375	1.0	1.0–1.1
Gender	−0.112	0.604	0.9	0.6–1.4

CI, confidence interval; OR, odds ratio.

critical as economic constraints in medical management have increased in recent decades (1–4). However, a literature search failed to reveal articles on non-attendance in pediatric allergy clinics.

In the current study, we investigated the factors for non-attendance in a pediatric allergy clinic. The overall non-attendance was 33.0%. We found that the factors which determine non-attendance include the ethnic origin of the patients and the season of the year.

In the current study, it was observed that Jewish rural patients had low non-attendance rates whereas Jewish urban patients and Bedouin patients had high non-attendance rates. The Bedouins in the Negev include about 150,000 people. They are an ethnic, religious and cultural minority. Their religion is Islam and their language is Arabic. The Bedouins are a population in transition from a nomadic to a settled and urban form of life. Currently, approximately 80% of the population lives in urban settlements and the other 20% practice a seminomadic lifestyle in small groups of tents or tin-shacks. Many of the Bedouins are in a low socioeconomic level with high unemployment rates. Many families depend on welfare funds. The medical services offered by the health authorities are not fully utilized owing to language, cultural and economic barriers and also to the geographical scattering. The transition from a traditional to a western lifestyle, characterized by changes in dietary habits and a reduction in physical activity is associated with substantial changes in morbidity patterns, such as a considerable increase in diabetes prevalence and childhood injuries (17, 18). Thus, the high non-attendance proportion in Bedouin patients is compatible with the socio-demographic characteristics of the Bedouin population described earlier. Previous research indicates that patients who miss appointments tend to be of lower socioeconomic status, have

government-provided health benefits and psychosocial problems (14). All these characteristics are typical of the Bedouin population. However, in a study from Hong-Kong (19), socioeconomic status did not exert a direct effect on non-attendance in public specialist outpatients clinics. In Hong-Kong, socioeconomic status seemed to act through waiting time and doctor-shopping: Affluent patients were *more* likely to miss their appointments because they eventually chose private consultants. Obviously, there are huge dissimilarities between the populations of Hong-Kong and southern Israel. The high non-attendance proportion in Jewish urban patients remains exceptional, in particular, in view of the low non-attendance proportions in Jewish rural patients. Several studies have shown a negative association between living in rural areas and reporting hay-fever symptoms or having positive skin prick tests to various allergens (e.g., house-dust mite, mold, cat and cypress) (20–22). The higher non-attendance rate in urban Jewish patients can therefore be explained by the fact that these children consulted for transient, hay-fever-like conditions, with spontaneous resolution before a consultation was conducted, leading to non-attendance. This is supported by the higher proportion of consultations (and non-attendance) during the spring season among urban Jewish patients. Alternatively, urban Jewish might be of higher socioeconomic status, seeking consultation in the private, rather than the public sector.

In the current study, we did not find an association between the waiting time for an appointment and non-attendance proportions. This observation is in contrast with previously published studies (19) and our own observations (23). Usually, the longer the waiting times for an appointment, the higher the non-attendance rates. However, this was not the case in this study. We assume that children are referred to pediatric allergy clinics owing to chronic diseases, such as atopic dermatitis or allergic rhinitis. The parents know that the diseases are long lasting, and therefore have the patience to wait for an appointment. Another possible explanation is that those children were already seen by other specialists who failed to find a solution. Therefore, they were more anxious to attend the clinic. In contrast, in pediatric dermatology clinics, many children are seen during the acute phase of diseases, such as impetigo. When there is a long waiting time for the dermatologic consultation, the disease may resolve or the parents may find another solution to the acute event rather than the public service, resulting in high non-

attendance rates (23). This assumption may be supported by the observation that non-attendance was higher in spring and winter than in summer and autumn. In spring, allergic situations may become more acute owing to the high pollen load, and in winter, acute exacerbations of atopic eczema may occur owing to the widespread use of heaters in Israel. These acute conditions may resolve spontaneously, leading to increased non-attendance proportions. The Mediterranean climate in Israel is characterized by principal blooming in spring, and also in autumn. However, some pollen grains stay around most of the year, with minor hay-fever symptoms seen beyond the peak season for patients' discomfort. Pollen-sensitive patients have been shown to have circulating antipollen immunoglobulin E (IgE) perennially, with varying amounts not necessarily correlating with the flowering season (24).

The legal consequences of non-attendance have been recently debated (25, 26). In the current study, reasons for non-attendance were not explored; such reasons might include forgetting the appointment, canceling it, feeling the appointment was not necessary etc. (25). Such reasons may be unacceptable from a medico-legal point of view, as it is claimed that these 'reasons' are an indication of failure to convey the full danger and hazards of the medical condition and the need for observation and treatment. The chief responsibility for keeping the appointment lies with the doctor, not the patient (26).

In summary, in the current study, we found that in children attending an allergy clinic, factors that determine non-attendance include the ethnic origin of the patient and the season of the year. We recommend that non-attendance rates should be accounted for in the planning and management of pediatric allergy clinics. While overbooking by expected non-attendance rates has been recommended (27), it might actually be counter-productive, as overbooking increases in-clinic waiting times (28).

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