Original Article
Public Health

TRAFFIC NOISE AS A SERIOUS EFFECT ON CLASS TEACHERS IN FIROOZABAD CITY, IRAN

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SUMMARY: Noise as an unwanted sound is unpleasant to listener. It can be physically, mentally, and physiologically harmful, and it interferes with important activities. Some studies show negative effects of aircraft noise on education procedures. We aimed to assess the impact of noise on the performance of teachers in classrooms, and on other educational activities. Method: We selected 384 class teachers by simple random sampling in primary, secondary, and high schools in Firoozabad City, Iran. We distributed the questionnaire to these class teachers and collected on the same day. The results showed that traffic noise was a significant factor that affected the teachers by reducing their teaching efficiency and by disturbing other educational procedures. Therefore, it needs more effective controls and more consideration in city planning.

Key words: Traffic noise, education, city planning

INTRODUCTION

Noise is one of the physical factors that are outcome of our modern life. It is unpleasant and can be physically, psychologically, physiologically, and socially harmful (1-3). Noise is, in fact, an unwanted by-product of urbanization and industrialization. Annoyance is a common psychological response to Noise (4). Annoyance is defined as a feeling bothered by noise disturbance or by displeasure associated with any agent or condition such as, conversation, rest interference, (5) fatigue, or headache (6-8). Speech interference by noise is also annoying9 Communication interference causes widespread annoyance (10, 11). Interference with activities might be a source of greater annoyance. Annoyance is associated with different types of activities and is a direct effect of noise on conversation, mental concentration, or recreation (5).

However, noise impairs the development of children, affects fertility outcomes (12, 13) and interferes with the immune system (14). Studies show that aircraft noise affects the professional efficiency and performance of teachers who teach in schools adjacent to airports (15). Traffic noise is the most widespread nuisance; about 62% of residents in cities are annoyed by traffic noise16 and also 86% of workers in their workplace are affected by this noise (17). Since teachers need a quiet place and more concentration to teach their students, we studied their annoyance level caused by traffic noise. Our studies

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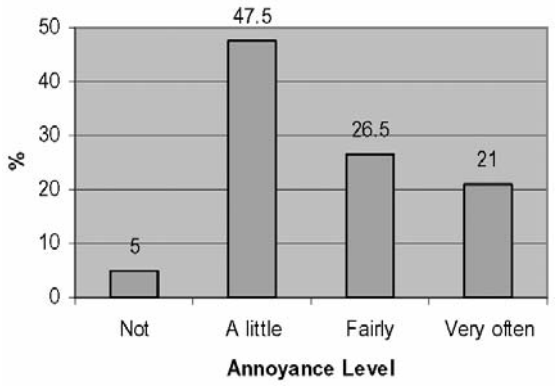

Figure 1: Annoyance level of teachers.

showed that traffic noise reduces a teacher's productivity and causes misunderstanding among students (18). The quality of education and all-round development of students are very important for a balanced human development process and thus for a nation's development, and we all know that teachers have an important role to play in this regard. In this study, we discussed the annoyance level of teachers due to traffic noise and its possible effects on their performance and educational procedures in schools in Firoozabad City.

MATERIALS

A cross-sectional study was performed on 49 schools, which included primary, secondary, and high schools in Firoozabad City, Iran. A total of 26 schools selected were near the high way or main road. Around 384 class teachers were selected by simple random sampling from different levels of education. With the coordination of education department and principal of each school, the class teachers were encouraged to assess noise effects on their teaching and other activities.

The questionnaire was designed based on teachers' annoyance due to traffic noise with 16 questions – derived from an earlier study (2) – that can affect class teachers' performance in their teaching and educational activities. The questionnaire was filled up directly by all the selected class teachers. The results were analyzed using SPSS (version 17) software.

RESULTS

The analysis reveals that traffic noise exposure annoys about 95% of teachers (Figure 1). A total of 56% teachers believe that traffic noise affects their professional efficiency and performance. Around 72% of them report that they have to either stop teaching for a while or put in more effort for teaching like raising their voices, closing windows, and repeating the lessons (Figure 2). Eighty percent of respondents reported that traffic noise causes teachers and students lose concentration and makes them disruptive and less inclined to work and activities. While 89% of teachers are forced to repeat lessons, 30% teachers have to repeat the lessons more than two times. A considerable percent of teachers believe that traffic noise makes students noisier and less inclined to their lessons, and causes lack of discipline (Figure 3) in the students. In addition to teaching interference, about 34% of teachers declare that traffic noise interferes with their normal communication.

Figure 2: Noise disturbance on teachers' performance in the class.

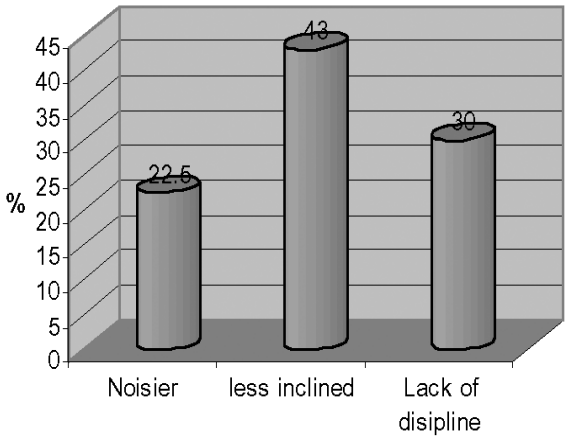

Figure 3: Student problems.

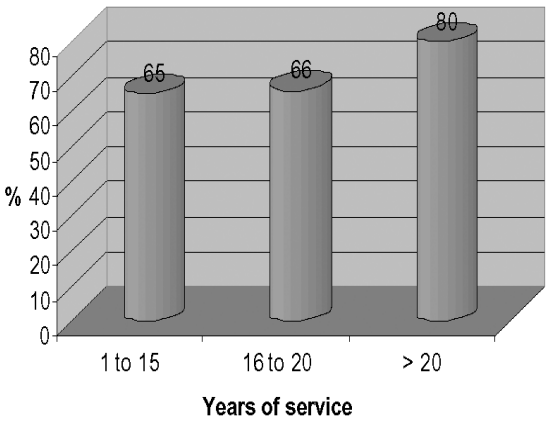

Figure 4: Years of service and noise effects.

A significant difference in efficiency is observed between male and female teachers because of traffic noise. The efficiency of male teachers is more affected by traffic noise than that of female teachers. Other problems experienced by male and female teachers are of equal magnitude. A total of 67% teachers had complaints of headache and 79% felt tired. The teaching procedures of teachers who have worked in the area for a long time are affected in much the same way or even more as those of new teachers (Figure 4).

DISCUSSION AND CONCLUSIONS

Teachers who teach in schools adjacent to highways and main streets are affected by traffic noise; however, they are reluctant to change their teaching procedures. When about 95% of teachers report that they often or sometimes suffer from traffic noise, the latter must be considered as a factor impacting negatively on student learning, and teachers' well-being, efficiency, and performance. We expected that traffic noise affect teachers less than aircraft noise as aircrafts fly over head; however, we found no significant differences. It might be related to poor classroom acoustics, which are frustrating for both students and teachers. The study shows that the teachers who have worked in the area for a long time are equally suffered from noise as those of new teachers. This means teachers cannot be habituated to traffic noise. Some studies show that noise has physiological effects on human beings, including adverse effects on blood pressure, pulse, heartbeat, and brain vessels, (19) so the complaints of teachers of headache and fatigue could be related to this psychophysiological effects of noise. Some important and crucial centers ensure that schools and hospitals have a calm and quiet surrounding (20). This means we must consider the school situation in city planning. A significant amount of literature also confirms that noise affects teachers' and students' educational procedure (21). So it is essential that we give noise the priority status in our plans for the quality of education. Noise should be considered an effective negative environmental factor in educational procedures not only for formal education under the jurisdiction of the Ministry of Education, but also for any educational program in any organization. The quality of education has a direct effect on the development of a nation. World Health Organization has suggested measures for decreasing the negative effect of exposure to noise on public health, (22) thus promoting noise management in the society. These measures should be considered in city planning related to educational fields. As several countries have done, (23) we recommend standards and guidelines related to acoustic design implemented for residential areas, particularly, those that need quieter environment like hospitals, schools, and other educational centers, or organizations.

ACKNOWLEDGMENT

The authors wish to thank all the teachers who participated in this study and cooperated in a friendly manner.

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