Assignment of ethnicity in patients with acute ischemic stroke in northern Israel

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ABSTRACT

The description of various methods for ethnicity classification can be found in the literature, though their reliability still remains unclear. We examined inter-observer agreement in defining the ethnic identification of patients in a bi-ethnic population (Arab-Jewish) in northern Israel, using place of birth and residence in addition to given and family names. Data about 1006 consecutive patients with acute ischemic stroke were gathered from our stroke registry. The data were analyzed by four independent observers (authors MH, TD, HH, GT) aiming to assign patients either as Arabs or Jews. Agreement between all four observers was excellent, as assessed by Fleiss’ Kappa statistic (κ = 0.96). We conclude that the use of given and family names of patients, together with their place of birth and residence, achieved near-perfect inter-observer agreement and a highly reliable assignment of ethnicity in two large ethnic population groups – Arabs and Jews – in northern Israel.

Keywords: Stroke; Ethnicity

1. INTRODUCTION

Ethnic differences in the etiology, clinical picture, work-up, and outcome of numerous diseases are well established [1-9]. This problem seems to be attracting growing interest. One of the important issues in studying ethnic influence is the correct assignment of the ethnic identity of patients involved in any given study. Obviously, precise ethnic identification is required for obtaining reliable results. The description of various methods for ethnicity classification can be found in the literature, though their reliability still remains unclear [10-15]. Therefore, we conducted an inter-observer agreement study on the ethnic assignment of patients in a bi-ethnic population (Arab-Jewish) in northern Israel, using place of birth and residence in addition to given and family names. The results of this study are highly important for planning of future studies devoted to the influence of ethnicity on different aspects of cerebro-vascular diseases in our region.

2. MATERIALS AND METHODS

Data were gathered from our stroke registry on 1006 consecutive patients with acute stroke who had been hospitalized once in the Department of Neurology in a major hospital in northern Israel (Rambam Health Care Campus) during the period from 2001 to 2003. For the ease of processing and the prevention of double-counts, 25 additional patients who had two or more hospitalizations during this period were not included in the study. The data presented for analysis included the patients’ given and family names together with their place of birth and residence at the time of the index event.

Four independent observers, all of whom are medical doctors, were invited to participate in the analysis and to define an ethnic assignment of patients as Arab or Jewish. The observers included an Israeli-born Jew (M.H), two Israeli-born Arabs (T.D and H.H), and one immigrant from the former Soviet Union living in Israel since 1992 (G.T). All of the observers received a table of data prepared by an additional person (E.K), who was not serving as an observer. The table included four items: first and family names together with place of birth and residence at the time of the index event. The observers were required to assign each patient as an Arab or a Jew. After the assignments were completed by all four observers, the statistical analysis was conducted. Since four observers were employed, Fleiss’ Kappa agreement statistic was used instead of the conventional two-observer Kappa.

3. RESULTS

Results of estimation of ethnicity by every observer are presented in Table 1. Note that complete agreement
across four observers was found in more than 97.5% of the cases evaluated.

Fleiss’ Kappa was 0.96 across all four observers, indicating near-perfect agreement in the assessment of ethnicity.

### 4. DISCUSSION

The identification of patient ethnicity by names, with or without additional factors such as place of birth, has been widely used in medicine for many years [16-21]. There have also been numerous attempts to use computerized systems for this aim as well [22-25]. However, these methods achieve results of varying reliability when applied in different ethnic populations [26-30].

We attempted to assign ethnicity in a bi-ethnic population of Arabs and Jews in northern Israel. Both of these large ethnic groups are ethnically heterogeneous. The Jewish population includes two main groups: Ashkenazi Jews from Central and Eastern Europe, and Sephardic Jews from the Mediterranean and North Africa [31]. The Arab population includes Sunni Muslims, Druze, and Jews from the Mediterranean and North Africa [32]. Despite being so ethnically heterogeneous, the first names and surnames of both populations remain highly distinctive between them. Two additional circumstances are helpful in the assignment of ethnicity to Arabs and Jews in the Israeli population. The first circumstance is that a significant number of Jewish people immigrated to Israel before and especially after the State of Israel was established in 1948. Thus, those patients who were born in countries other than Israel can safely be assigned to the Jewish population. The second circumstance is that there are numerous densely populated areas of Israeli Arabs. As there is very little genetic intermingling between the two populations, a patient’s place of residence in one of these areas is a clear indicator of Arab ethnicity. In conclusion, when considering the patients’ given and family names, together with their place of birth and residence, we were able to achieve extremely good inter-observer agreement, thereby allowing a highly reliable assignment of ethnicity in the Arab-Jewish population of northern Israel. The results of our study demonstrate that even in case of retrospective studies, when there is no possibility to define ethnicity by direct patient interview, the method of ethnicity assignment by names and place of birth could be highly reliable.

### REFERENCES


