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Causes of road accidents as perceived by Arabs in Israel: A qualitative study

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ABSTRACT

To investigate beliefs and attitudes of Arabs in Israel regarding causes of road accidents, 12 focus groups were conducted with a total of 104 adult Israeli Arabs. Participants reported major differences between Arab and Jewish towns and villages in terms of individual driving behaviors, social norms of driving, infrastructure, and traffic enforcement. Discrimination was perceived as an indirect cause of traffic accidents, expressed mainly in lower investment in infrastructure and traffic enforcement in Arab villages. Arabs' defiance of state authorities and low socio-economic status were also perceived as a cause of unsafe driving. A grounded theory model based on the socio-ecological model was developed to explain these factors. Prevention of unsafe driving behaviors in Arab villages and towns requires a socio-ecological approach combining various strategies at multiple levels.

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1. Introduction

Traffic accidents are not equally distributed among various populations, and minority groups often are at a higher risk of being involved in accidents than the majority population (Campos-Outcalt, Bay, Dellapenna, & Cota, 2002; Stirbu, Kunst, Bos, & van Beeck, 2006). To decrease the levels of minority involvement in accidents, specific factors that may be related to the problem need to be understood. They may involve infrastructure inequalities, individual high risk driving behaviors, and other social and cultural factors.

In Israel, as in many other Western countries, traffic accidents are a major public health problem associated with hundreds of deaths and thousands of injuries annually. During 2007 traffic accidents in Israel were responsible for 398 deaths and 32,805 injuries (NRSA, 2008). The economic burden of traffic accidents is also significant. During the years 2000–2002 the annual cost of traffic accidents comprised 2.5% of Israel's GDP (Israel Ministry of Transport, 2004).

Israel has two main ethnic populations; the majority (80%) Jewish population and the minority (20%) Arab (mostly Muslim) population. About 90% of the Arab population resides in Arab villages and towns that are segregated from the Jewish communities; only about 10% live in mixed cities.¹ The Arab community is largely an underprivileged minority with a history of disadvantage in income, education and employment. To some extent, the Arabs in Israel suffer from prejudice and discrimination, and it has been suggested that discrimination plays a part in the income disparities between Arabs and Jews (Bushman & Bonacci, 2004; Haberfeld & Cohen, 2007; Okun & Friedlander, 2005; Wolkinson, 1999).

Arab drivers are highly involved in traffic accidents. In 2001, Arabs accounted for 12% of all drivers in Israel, but were involved in 16% of the accidents (Gitelman, Lavi, & Aisman, 2004). Given that the average car travel time is longer among Arabs than Jews (Taubman Ben-Ari, 2008), the higher involvement of Arabs in road accidents may be simply due to their

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¹ Cities in Israel with an absolute majority of Jews and substantial proportion of Arabs.

higher levels of exposure. However, a recent analysis conducted by Factor (2008) reveals that Arab drivers are involved in road accidents three times more than Jewish drivers, even after controlling for distance travelled (as an indicator of exposure). Specifically, it was calculated that the frequency of drivers involved in road accidents was 242 accidents per kilometer driven among Arabs, compared to 83 among Jews (Factor, 2008, p. 103).

This relatively high involvement can be explained by behavioral and environmental factors. There is evidence that Arabs have higher rates of traffic violations, such as speeding and less use of seat restraints (Gitelman et al., 2004; NRSA, 2008). Arabs' high involvement in road accidents may also be exacerbated by low quality and insufficient maintenance of road infrastructure in Arab communities (NRSA, 2008). This situation can be attributed to various causes. Historically, Arab communities were originally built for traditional modes of transportation, such as horses and wagons and roads were narrow and winding. Over the years most Arab communities remained unchanged, and were not adjusted to the needs of modern transportation (Bar-Gal & Soffer, 1981). Another cause could be the political situation of Arab communities at both the state and the local level. At the state level, institutional discrimination against Arabs can be expressed in the exclusion of Arab communities from national planning projects, so their unsafe road infrastructure remains unchanged (Okun & Friedlander, 2005). At the local level, characteristics of the Arab local authority itself, such as incompetence to run local resources or low prioritization of road safety, may be a contributory factor.

The high involvement of Arabs in traffic accidents along with their unique characteristics as a minority in Israel create the need to tailor interventions specifically for the Arab community to decrease their involvement in road accidents.

To date, most studies in the Arab community have focused on standard quantitative measures of traffic accidents. However, in light of the differences in culture, religion, and lifestyle of the Arab community from the Jewish community in Israel, a qualitative approach would be helpful to gain a deep understanding of the unique road safety problems in the Arab community. The present study sought to identify attitudes and beliefs regarding the cause of traffic accidents by applying a qualitative focus group discussions (FGD) methodology among Israeli Arabs in northern Israel.

2. Methods

2.1. Study design

The qualitative data for this study were gathered by the FGD method. The discussion guidelines for the FGDs were developed by the research team, which included the authors and an expert consultant for FGDs. The FGDs were facilitated by senior public health nurses from the Arab sector, who had considerable experience in facilitating FGDs (one of which is the third author).

The facilitators received professional training by the research team and a focus group expert, consisting of a workshop on focus groups including a trial focus group run by the expert on the issues of road accidents in the Arab community. The facilitators themselves were the discussants; afterwards the expert analyzed the discussion.

Twelve focus group sessions were conducted, from March 2006 through March 2007, each lasting 90 min with 7–13 people attending, making a total of 104 participants. Six FGDs were lead by one facilitator, two by another, and one each by the remaining four facilitators. The sessions were recorded and subsequently transcribed and translated into Hebrew as some of the research team did not understand Arabic. After each session the research team discussed problems reported by the facilitators, and guided them before the next. Focus groups were conducted until new themes ceased to emerge.

2.2. Participants

The predetermined inclusion criteria for participating in the FGDs were: being an Israeli Arab adult (age 20 and older), holding a driver's license, and having routine driving experience (driving at least once a week). In addition, an a priori decision was made that each FGD will include people from the same age group [young adults (20–45) or older adults (45+)] with the same educational backgrounds [academic or non-academic education]. Groups were composed in this way to make them relatively homogenous, so that people can express themselves uninhibitedly.

Recruitment was by the snowball method, where the facilitator invited acquaintances, who invited their own acquaintances to join the groups. We chose the snowball sampling approach in this study as it was found highly effective in qualitative research (Quinn-Patton, 2002), especially among ethnic minorities (Hedges, 1979). Each focus group facilitator was responsible for recruiting participants for his/her session, as well as for securing a meeting space (usually at community centers or in private settings). The facilitators identified potential participants according to the aforementioned predetermined conditions and invited them to the FGDs.

In sum, 12 FGDs were conducted at Arab communities in northern Israel: six FGDs were held in Arab towns, four in Arab villages, and two in Arab neighborhoods in mixed cities. Each FGD was conducted in the community where its participants live. Six groups included young adults (20–45), from which three groups included participants with an academic education and three groups included participants with a high school education or less. The remaining six groups included older adults (45+), from which three groups included participants with an academic education, and three groups included participants with a high school education or less. Most groups consisted of men and women. Exceptions were two groups that included only women and one group that included only men; this was not planned. No difference in themes and categories was observed in the non-mixed groups.

2.3. Focus group procedure

A discussion guideline was developed during meetings between the research team and the focus group expert. The discussion guide was pilot-tested during the first FGD and further developed and refined with input and insights during the first three FGDs.

The FGDs were held according to the discussion guideline: first the causes of road accidents were discussed (45 min), and then potential means for prevention were proposed by the group members and discussed (45 min). In this article, only the findings regarding the causes of road accidents are presented. A full description of the FGDs findings is provided elsewhere (Baron-Epel, Hemmo-Lotem, & Moran, 2007).

In addition to the regular format of free discussion, at each session the group members joined in two brainstorming activities in small groups (each activity lasted 10 min). In the first activity each group was given a brief description of a fictional road accident event and was asked to complete the full story, including who were involved, and what were the accident's causes and consequences. In the second activity group members were asked to plan a road accident prevention program, including target populations, specific activities, main themes, etc. These brainstorming activities stimulated discussion and allowed participants to express undirected opinions. We assumed that people would express themselves more freely when talking about hypothetical events. Interestingly, contrary to expectations, no major differences were found between themes that emerged during the brainstorming activities and those that emerged during regular discussions. This may mean that the brainstorming activities were not planned appropriately to achieve their aims or that participants expressed themselves freely in the regular discussions just as well. The latter seems likely, as in most FGDs the group members and the facilitators knew each other quite well and shared a common background, as all facilitators and participants were Arabs living in northern Israel.

2.4. Data analysis

Data were analyzed qualitatively according to the guidelines of Unrau and Coleman (1997): the text was divided into meaningful units, its themes and categories were identified, and finally the data were explained and interpreted. The research team (see Section 2.1) read the transcripts and each team member coded and organized the data to identify key categories. The lists of categories were compared, and any inconsistencies were resolved by a review of the data and then reaching agreement through discussion. The researchers then reread all the transcripts and found the categories running through the focus groups (Morse, 2008). The same process was used to obtain a consistent list of themes.

3. Results

Table 1 presents the three major categories and four major themes identified in our qualitative analysis. First, categories were developed in a process of 'descriptive content analysis', which included descriptive reading of the transcripts and identifying similar chunks of text. Consequently, the following three categories were identified: behavior (referring mainly to driving behavior), law enforcement (referring mainly to traffic enforcement), and infrastructure (referring mainly to road infrastructure). Pushing the analysis further, themes were developed in a process of 'interpretive content analysis', which included interpretive reading of the transcripts and identifying issues of meaningful 'essence' that run through the text. Consequently, the following four themes were identified: differences between Arab and Jewish communities, discrimination, defiance, and socio-economic status. Finally, the categories and themes were examined one in light of the other and several superpositions were identified as shown in Table 1. For example, the theme 'differences between Arab and Jewish communities' appeared in all three categories, while the theme 'defiance' appeared only in the 'behavior' category.

Our findings are presented below according to the four main themes: each theme is presented separately by reviewing the categories in which that theme appeared.

3.1. Differences between Arab and Jewish communities

The predominant theme, which appeared in all FGDs and in all categories, was the perceived difference between Arab and Jewish communities in terms of: driving behavior, road infrastructure and traffic enforcement. This theme was expressed by the group without prompting by the facilitator.

Table 1
Categories and themes identified in the FGDs.

Themes	Categories		
	Behavior	Law enforcement	Infrastructure
Differences between Arab and Jewish communities	+++	+++	+++
Discrimination	–	+++	+++
Defiance	+	–	–
Socio-economic status	+++	+	+

+++ Very common themes (emerged in at least eight groups); + Infrequent themes (emerged in five groups or less out of 12); – Did not emerge in any of the groups.

3.1.1. Driving behavior differences between Arab and Jewish communities

In all FGDs participants said that Arabs regularly drive unsafely in their villages, whereas outside their villages, and especially in Jewish cities, they drive safely and obey the law. On the individual behavior level, this account is characteristic:

The Arab man, he has two personalities: an “enslaved” personality, and another personality that he uses when he’s alone and not in institutions. In other words, in his home he behaves differently than in institutions. . . the Arab driver obeys traffic laws in [Jewish] cities, but in the village he doesn’t.

Interestingly, when describing bad driving manners in the Arab villages and towns, participants used various phrases connoting an inter-personal relationship: *impolite driving behavior, careless driving, irresponsible driving, disrespectful driving, grumpiness, and impatient driving.*

Participants also described the unsafe driving style as a social norm, which was a ‘contagious’ behavior that quickly spreads in Arab villages and towns, and creates social norms of unsafe driving:

Our behavior on the road depends on the way most people behave; when everyone parks on the sidewalk, so do I.

They described a strong tendency to conform to unsafe driving social norms. The social impact of unsafe driving patterns in Arab villages and towns was perceived as a serious problem that made it impossible for an individual driver to obey traffic rules or to adhere to good driving behavior, despite good intentions:

My husband respects the law, but others don’t. Sometimes this causes accidents, because there is one person who is cautious and the rest are not. This is a very serious problem.

Of course there are more accidents in the Arab sector [than in the Jewish sector], and I want to emphasize the social environment. One person breaks the law and then everybody behaves like him, ‘herd culture’; not because they want to break the law, but because there is a herd culture.

From the participants’ descriptions, they seem to perceive the social norms of driving as different in the Arab towns and villages from elsewhere.

3.1.2. Infrastructure differences between Arab and Jewish communities

Participants described major differences in infrastructure quality and maintenance between Arab and Jewish towns and villages:

I live in ‘Nazareth’ [an Arab town], and when I go from ‘Nazareth Ilit’ [a nearby Jewish city] to ‘Nazareth’ I feel the difference: there are no sidewalks, and there are narrow alleys that cars can’t pass through.

Is there one Arab village even with integration lanes or with a traffic light? If you go from ‘Kiryat Ata’ [a Jewish town] to ‘Arabe’ or ‘Sachnin’ [Arab towns], you feel like you’re going from Los Angeles to Mozambique.

More specifically, participants described infrastructure deficiencies in Arab towns and villages: unsafe and narrow roads, and a lack of many road elements such as sidewalks, parking lots, pedestrian crossings, traffic signs, traffic lights, and speed humps. They also noted the absence of amenities such as street lighting, playgrounds, parks, and paths for pedestrians and cyclists:

In the Arab village there is nowhere for children to play, and the road is the playground. . . In Jewish settlements every neighborhood has a park and playground.

Participants perceived poor infrastructure in their villages and towns as a cause of the higher risk of road accidents in the Arab community. They described various ways in which unsafe road infrastructure contributes to road accidents, or is their direct cause:

If you go into a dark road with no lighting, and there’s a women wearing black and your driving speed is in the legal range and there are no pedestrian crossings, there’s a high chance that there will be an accident, and that the main determinant will not be the driver.

Others said that poor infrastructure can lead indirectly to road accidents by encouraging unsafe driving behaviors:

In the [Arab] villages there is no obeying [traffic] laws, since there are no traffic lights, traffic signs or pedestrian crossings. . .

3.1.3. Differences in traffic enforcement between Arab and Jewish communities

In general, participants described major differences in traffic enforcement between Arab and Jewish communities. According to the participants, the police enter Arab villages and towns to enforce traffic laws infrequently, but they do enforce traffic laws in other places, especially in Jewish cities:

There are many policemen stationed outside Arab villages and towns, but many road accidents that happen in the villages involve many deaths and the police don't intervene.

Participants acknowledged the role of routine traffic law enforcement for road accident prevention and perceived the lack of traffic law enforcement within Arab villages and towns as a serious problem:

The presence of the police in the villages per se is very important in order to implement traffic laws and to ensure traffic supervision, but in practice they don't work as they should in the Arab community.

Lack of traffic enforcement was perceived as a cause of unsafe driving in Arab villages and towns. In many FGDs participants contrasted Arab drivers' unsafe behavior in their villages with their safe behavior outside, especially in Jewish cities:

The Arab driver obeys traffic laws in the [Jewish] city, but not in the [Arab] village, because the police are hardly present there, so people don't wear safety belts and drive over the speed limit.

If someone is driving in 'Haifa' [a mixed city], he won't do something if he has the slightest fear that he'll get a ticket for it, this will not happen in 'Nazareth' [an Arab town]. . .

Inside the village people feel less pressured. . . I see that people disregard their driving in the village more than outside it, and that's because there is something that we're forced to consider outside the village—I mean police, speed traps.²

3.2. Discrimination

Another dominant theme was discrimination against the Arab minority by the state authorities. This was a common theme in most FGDs and appeared in two major categories: traffic enforcement and road infrastructure (Table 1). In general, the participants described discriminating attitudes of the Israeli authorities towards the Arab minority. This, in their opinion promotes high risk of road accidents among Arabs:

Because the state of Israel is a state for the Jewish population, and because we are a minority, our rights are disregarded, even in transportation.

The state is interested in lack of road safety in the Arab sector, so that the Jews can feel themselves superior.

More specifically, the participants described discrimination against Arabs in both traffic enforcement and road infrastructure improvements and maintenance.

Generally, participants described discrimination in investments in new and safe infrastructure and in maintenance of existing infrastructure, which, in turn, produced the unsafe infrastructure of Arab villages and towns as compared with the Jewish villages and towns:

The budget of the local authority comes from the state, which gives a higher budget to the Jewish sector.

They made improvements in a road around the village and stopped at the entrance to the village.

In some cases racism was mentioned as the origin of discrimination in infrastructure:

Racism exists in reality and we experience it every day. . . they [the government] take all kinds of taxes and part of that tax is returned to citizens as amenities, which we, the Arabs, don't receive. For example, traffic light on a road.

In the Jewish villages around the Arab village they made infrastructure improvements; there is racism against us.

The lack of traffic enforcement in Arab towns and villages was also perceived as a consequence of discrimination against Arabs in Israel:

There is general inconsideration of the Arab sector, and the police are aware of the difficulties in the Arab sector, but don't intervene.

As in the case of road infrastructure, some participants attributed discrimination in traffic enforcement to racism:

The police don't act in favor of the Arab sector. There is racism and the police don't enter the [Arab] villages.

According to the participants, lack of traffic enforcement led to unsafe driving behaviors in Arab towns and villages. In one group this was described by an interesting analogy:

It's like a child who's left alone to play in a room, and then he can break things and destroy them. But when an adult hits him, supervises him and educates him – then things will change. . . This is similar to what happens inside our villages, where there is no inspection or supervision.

² Special radar that film vehicles that drive above the legal speed limit.

3.3. Defiance

The defiant attitude of the Arab minority towards the Israeli authorities emerged as a theme in all categories in a few FGDs (Table 1). This is expressed in their driving behavior within the Arab villages and towns in general, and in active resistance to traffic law enforcement and vandalism of road infrastructure in Arab villages and towns in particular:

When the Arab citizen enters his town he doesn't obey the law, and if a policeman approaches to give him a ticket he won't admit and he'll defy him as well.

One participant stated that the low police presence in Arab villages contributed to the defiant attitude of road users against them, and suggested increasing the number of police in Arab villages as a solution:

Once I saw a women driving and her son put his head out of the window. A cop approached and started talking to her. Then about 15 people gathered around him and asked him to leave her alone. I imagine that if there were more than one policeman in the same situation they wouldn't dare to act that way... It's important that more than one policeman be present in Arab villages... It would prevent violence against the police...

Vandalism of road infrastructure was also mentioned as an act of defiance, and was described as fostering unlawful driving:

They smashed a 'No Entry' sign and vehicles regularly enter the road and drive against the law, and there are no policemen, no surveillance.

The city council made a certain road one-way, but residents resisted and pulled down the traffic sign, and the road became two-way again.

3.4. Socio-economic status

According to the participants, the high risk of road accidents in the Arab sector can be attributed to low socio-economic characteristics at the individual and the community levels. At the individual level, participants said that low socio-economic characteristics of Arab people affect their behavior in various ways. From a psychological perspective, most participants believed that socio-economic daily problems lead to situational stress when people drive, which adversely affects driving behavior:

The socio-economic status leads to more thinking about the situation and to lack of concentration when driving.

'We, the Arabs, we have a unique characteristic—most of the time we are in stress because we think a lot about our socio-economic problems.

Blue-collar jobs, including physical hard work for many hours, were mentioned as a common occupation among Arabs. This increased the risk of road accidents:

Our [the Arabs'] tough socio-economic situation makes a lot of people work a lot, for many hours, and eventually to fall asleep at the steering wheel on their way home.

Participants also mentioned lack of resources for car repair and maintenance due to low income:

Low socio-economic status has a negative effect on road accidents, so you can't repair your car, or more accurately, you can't afford a car repair.

Our socio-economic status is problematic... We don't even have enough money to repair our cars.

The above socio-economic factors (preoccupation with economic problems while driving, driving fatigue after hard and long work days, and lack of resources for car repair and maintenance) are all at the individual level. At the community level, low socio-economic position emerged in a few FGDs as a cause of road accidents. In general, the participants asserted that the local authorities of Israeli-Arab villages and towns lack sufficient budgets to maintain adequate levels of road safety.

4. Discussion

The foregoing qualitative analysis of Arabs' perceptions identified themes far beyond the concepts of traffic accidents, but rather concerned wider socio-political and socio-cultural aspects of the Arab community in Israel. We start our qualitative analysis by comparing our main findings with the existing literature. We continue by examining the perceived causes of unsafe driving in Arab villages and identifying inter-relations among them. Based on that, we propose a grounded theory to explain the factors and mechanisms that contribute to the increased risk of traffic accidents in Arab villages and towns. Thereafter, limitations of this study are discussed. Finally, we draw our conclusions and present implications for interventions. Throughout, we suggest topics for future research.

First, it is noteworthy that our findings are strongly supported by another recent study (Taubman Ben-Ari, 2008) that consisted of qualitative FGDs (separate sessions of Arabs and Jews) and a quantitative population survey. According to the survey findings, compared to Jews, Arabs driving manners and attitudes were significantly less cautious and tolerant, and more anxious, risk-taking and hostile. In addition, the themes raised in the Arab FGDs in Taubman Ben-Ari's research are strongly similar to those raised in our FGDs, including: unsafe and unlawful driving behaviors within Arab communities, unsafe infrastructure and lack of law enforcement within Arab communities, and defiance towards Israeli authorities. Interestingly, these themes were not common in the Jewish FGDs, indicating that these issues are unique to the Arab community in Israel, and hence require careful treatment when planning tailored-on interventions in the Arab community.

The most dominant and intriguing theme identified in our FGDs was the Arabs' unsafe and unlawful driving behavior in their villages and towns, compared to their safe and lawful driving outside. This pattern has been documented in previous observational and self-report studies. For example, a study, which included observations on drivers ($n = 12,804$ ³) within and outside Arab towns (Geocartography, 2005), found that wearing seatbelts was less common in Arab towns (28% of the drivers observed) than outside (75% of the drivers observed outside). Likewise, in a recent survey held among Israeli Arabs ($n = 600$) (Obeid, Unpublished results), several unsafe and unlawful driving behaviors were reported as much more common within than outside Arab villages and towns, including: driving without seatbelts on, noncompliance with traffic signs, and careless and disrespectful driving (high volume music, parking where not allowed). In another recent survey among 500 Israeli Arabs 40% of the respondents reported they do not restrain their children in the car when driving within their village (Beterem, 2009).

The social norms of driving expressed by participants in our FGDs are known in the literature as 'driving culture' – codes of driving behavior, which proliferate among drivers in a given environment (Factor, 2008; Zaidel, 1992). In our FGDs the driving culture in Arab villages and towns was described as unsafe and unlawful, including: lack of road manners, risky driving, traffic offences, and active resistance to traffic enforcement (e.g., violent gestures directed at policemen in Arab villages) and to infrastructure changes (e.g., vandalism against new infrastructure in Arab villages). It is reasonable to assume that the high familiarity among the Arab community members creates strong social cohesion and social conformism, which, in turn, lead to the rapid propagation of driving behaviors within the community.

Lack of traffic enforcement in Arab villages was perceived as a significant contributor to the unsafe driving culture in Arab villages and towns. The association between lack of traffic enforcement and unsafe driving cultures has been observed in various countries. At the country level, it was found that informal driving codes tend to develop in countries with weak formal traffic law enforcement (Factor, Mahalel, & Yair, 2007). For example, in India, where there is relatively little formal traffic law enforcement, drivers regularly give right of way to bigger cars (Edensor, 2004). At the individual level, the findings of another focus group study that analyzed driving experiences in different countries (China and the USA) demonstrate how individuals adapt unsafe driving manners in environments of low traffic enforcement. According to those findings, in the USA drivers focus mainly on safe and lawful driving, whereas in China, where traffic enforcement is weak, drivers do not obey the law and focus more on reacting quickly to other drivers on the road (Huang, Zhang, Roetting, & Melton, 2006).

Unsafe road infrastructure was also described as a serious problem in Arab villages, which might contribute to unsafe driving culture. There is some objective evidence of unsafe infrastructure in Arab villages and towns to support these findings (Baron-Epel et al., 2007).

Interestingly, a gap seems to lie between the participants' strong desire for more traffic enforcement and infrastructure improvements, and their active resistance to these elements. This may be explained by Arabs' dissatisfaction with the current format of traffic law enforcement and infrastructure changes in their communities. Yet given the complex socio-political situation of Arabs in Israel, there seems to be more to it than just dissatisfaction. In all our FGDs the participants expressed a strong sense of non-alignment with the state authorities. In this light, resistance to traffic law enforcement and infrastructure improvements can be seen as an expression of an objection to any kind of state intervention in Arab communities.

Regardless of the socio-political context of the Arab minority in Israel, their low socio-economic status may also contribute to their high risk for traffic accidents. The association between low socio-economic status and risky behaviors was mentioned in most FGDs, and it has been largely documented in the literature as well (i.e., Factor, 2008; Factor, Mahalel, & Yair, 2008).

Another possible explanation for the development of an unsafe driving culture in Arab communities, which was not brought up in our FGDs, is their rural characteristics, in terms of their physical environment (geographic isolation, far from urban clusters) and social structures (low population size and consequent intimate and homogeneous forms of social interaction) (Ward, 2007). According to the literature (Rakauskas & Ward, 2007; Ward, 2007), these rural characteristics in themselves may lead to unsafe driving cultures, often referred to as 'rural driving culture'. Future research should further investigate this hypothesis while distinguishing the relative influence of the settlements' characteristics (rural versus urban) from the relative influence of the society (Arabs versus Jews). This can be achieved by comparing drivers' behaviors in four types of settlements: rural Arab villages, rural Jewish villages, Arab cities, and Jewish cities.

³ This number – 12,804 – refers to the total number of cars/drivers that were observed in this study both within and outside Arab towns.

4.1. A grounded theory model to explain unsafe driving behavior in Arab villages

Subsequent to the above qualitative analysis, we developed a grounded theory to explain the factors that contribute to the unsafe driving behavior in Arab villages and towns. According to Strauss and Corbin (1990: p. 23), ‘a grounded theory is one that is inductively derived from the phenomenon it represents’. As a grounded theory, our model does not aim for the ‘truth’ but to conceptualize the informants’ viewpoint. Correspondingly, the results of our grounded theory model are not a report of facts, but a set of conceptual hypotheses developed from the informants’ statements (Glaser, 1998). We chose the socio-ecological model as the theoretical framework and applied it to safety behavior. According to the socio-ecological model, an individual’s safety behavior is influenced by factors on various scales and levels: intra-personal, inter-personal, community, and state level (Gorin, 1998; McLeroy, Bibeau, Steckler, & Glanz, 1988; Sallis & Owen, 1990).

A graphic illustration of the model is shown in Fig. 1. In general, the model aims to answer the question: ‘What are the factors that contribute to unsafe driving behaviors in Arab villages and towns?’ The answer lies in various factors at the inter-personal, community, and population levels, as follows:

Several inter-related factors contribute to the unsafe behavior of individuals in Arab villages and towns: At the community level, policy and built-environment factors, including insufficient traffic law enforcement and unsafe road infrastructure, enhance unsafe individuals’ unsafe behavior directly and indirectly – by enhancing unsafe driving culture. At the state level, the socio-political and socio-cultural environments contribute to an ‘unsafe driving culture’ in Arab communities. For the purposes of discussion the socio-political environment refers to the relationship between the Arab minority and the state authorities, and includes the perceived discrimination by- and defiance of state authorities. Socio-cultural aspects refer to the strong social cohesion and social conformism within the Arab society.

To explain how these factors lead to unsafe driving behaviors and unsafe driving culture in Arab villages and towns, we developed another theoretical model of mechanism (see model illustration in Fig. 2).

This model distinguishes between two main types of factors that lead to the unsafe driving behavior in Arab villages and towns: (1) factors at the community level (and below) that describe what is happening within Arab communities, and include: lack of traffic enforcement and infrastructure maintenance within Arab communities (community level), unsafe driving behaviors (individual level), and unsafe driving culture (inter-personal level) (Fig. 2, boxes 2, 3 and 5, respectively) and (2) factors at the state level that describe the situation of the Arab population as an ethnic minority in Israel, and include: discrimination and deprivation, defiance of Israeli authorities, and strong social conformism (Fig. 2 boxes 1, 4 and 6, respectively).

The theoretical mechanism model describes a negative feedback process in which the aforementioned factors interact. According to the model, discrimination and deprivation of the Arab sector by Israeli authorities at the state level (Fig. 2, box 1) leads to reduced investment in traffic enforcement and infrastructure maintenance within Arab communities (Fig. 2, box 2). Consequently, the poor road infrastructure conditions along with the reduced chances of getting caught and punished for traffic offences lead individuals to drive unsafely and unlawfully within their communities (Fig. 2, box 3). At the same time, the increase in discrimination and deprivation of the Arab sector by Israeli authorities (Fig. 2, box 1) enhances feelings of defiance of Israeli authorities among Arabs (Fig. 2, box 4), and vice versa. These feeling of defiance further enhance the unsafe and unlawful driving among Arabs within their communities (Fig. 2, box 3). In this manner, by driving unlawfully, Arabs reject the states’ traffic law and thereby express their feelings of defiance of Israeli authorities. It does

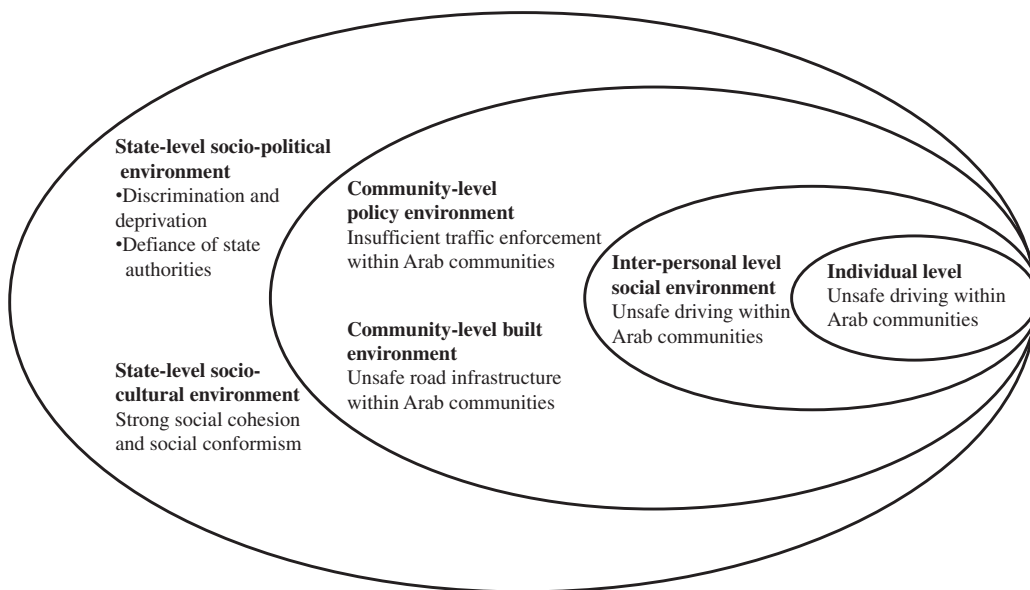


Fig. 1. A grounded theory model to explain the factors that contribute to unsafe driving behaviors in Arab communities.

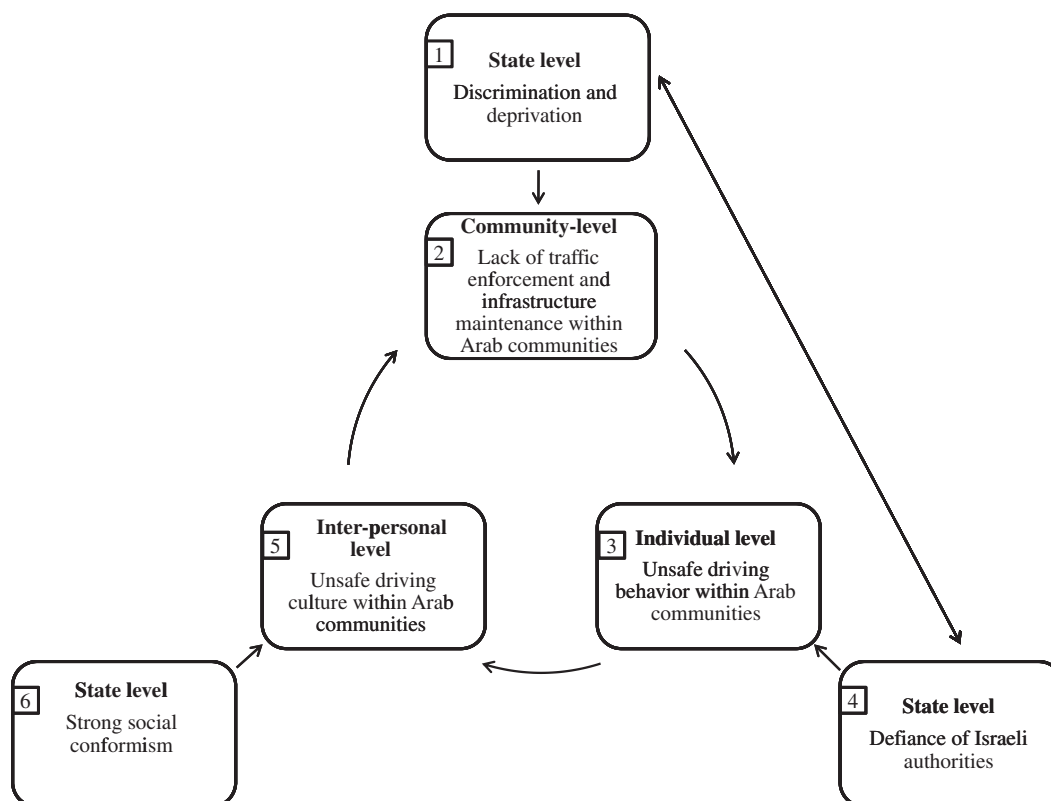


Fig. 2. A theoretical mechanism model to explain how factors at various levels contribute to unsafe driving culture within Arab communities.

not take long until most individuals adopt such unsafe and unlawful driving behaviors, thereby creating an unsafe driving culture in Arab communities (Fig. 2, box 5). The rapid propagation of such unsafe driving behaviors within the community is enhanced by strong social conformism (Fig. 2, box 6), which is typical to the traditional and collectivist nature of the Arab society in Israel. The unsafe driving culture creates a reality within Arabs communities in which traffic laws are constantly disobeyed and driving behavior is dictated mainly by unsafe social norms. This makes it more and more difficult to enforce traffic laws and to maintain safe infrastructure in Arab communities. Consequently, the states' authorities further reduce investment in traffic enforcement and infrastructure maintenance within Arab communities (Fig. 2, box 1), and so on and so forth – this negative feedback process continues in a cyclic fashion.

It is noteworthy that the grounded theory (Fig. 1) and model of mechanism (Fig. 2) that we offer here over-simplify a complex reality. These processes do not necessarily occur in the above described chronology: some may occur simultaneously, while others may occur in a different order. For instance, in some cases discrimination may be the first dominant trigger leading to the other processes in the model, while in others unsafe driving culture may be the dominant driving force.

4.2. Limitations

Being a qualitative research, our study has several inherent limitations. The snowball sampling technique yielded a small study population that does not represent the large population of Arabs living in Israel. Correspondingly, empirical generalizations of the results are not possible.

Using the focus groups methodology may have influenced the results through group interaction and peer pressure. Likewise, the participants in each FGD were superficially⁴ acquainted with each other; this may have slightly influenced the research results.

Another limitation of this study lies in the uneven distribution of facilitators among the groups that might increase the variance of the results among the different groups. However, this limitation was overcome due to the professional training given to the facilitators, which formed a consistent way in which they ran the groups.

Finally, including some Jewish groups in this study as a reference could have helped validate the results, given the fact that a recurring theme in the findings was the differences between the Arab and Jewish sector (in terms of road infrastructure, traffic enforcement and driving behavior).

⁴ No close friends or family members participated in the same group.

4.3. Conclusions and implications

In sum, our qualitative analysis and grounded theory and mechanism model suggest that unsafe driving in Arab villages and towns is influenced by factors at various levels (inter-personal, community, and population) and domains (policy, built environment, socio-political and socio-cultural environments). It follows that the prevention of unsafe driving behaviors in Arab villages and towns requires a socio-ecological approach involving a combination of various strategies at multiple levels. Moreover, we may conclude that mono-strategy prevention approaches, which have characterized many of the interventions in the Arab sector to date, will not improve driving behaviors in Arab villages and town. An example of the limited effectiveness of such mono-strategy interventions is evident in an Israeli program to promote appropriate use of child-restraint in cars (Israel Ministry of Health., 2004). This program includes educating and instructing parents in infant welfare centers in both Arab and Jewish communities. However, the program does not include enforcement of child-restraint regulations. The program has been running for more than a decade now, and the frequency of appropriate use of child-restraint in cars is still low among both Jews (Beterem, 2004) and Arabs (Beterem, 2009). This demonstrates that in order to create a behavior change, interventions should not rely on one strategy, but rather combine several strategies. To our matter, building new and safe roads in Arab communities alone would not improve driving behaviors as long as traffic laws on these roads are not consistently enforced. Likewise, public education interventions alone to prevent unsafe driving will not be beneficial, as long as the road environment is not adjusted for safe driving (e.g., lack of traffic signs).

At the individual level, the Arabs seem to project their feelings of perceived discrimination and defiance onto daily traffic situations by routine traffic offences, and active resistance to traffic law enforcement (e.g., violent gestures directed at policemen) and to infrastructure changes (e.g., vandalism of new infrastructure). From a psychological perspective, this projection can be interpreted as a form of 'acting out', defined as 'the expression of unconscious emotional conflicts, feelings or desires through inappropriate action' (VandenBos, 2007). This hypothesis should be tested in future research, as it raises interesting implications for prevention. If this is the case, coping strategies for acting out could be adopted in future interventions to prevent unsafe driving in Arab settlements.

At the population level, socio-political and socio-cultural factors indirectly influence unsafe driving behavior in Arab villages and towns. The phenomena of discrimination, defiance and social conformism are not usually the scope of traffic accident prevention. However, awareness of these factors and of their influence on driving behavior is important in the planning of preventive interventions. A grassroots approach may be advisable, with the training of community agents for change as a complementary strategy to formal traffic law enforcement and infrastructure improvements. The participants in our FGDs seemed aware of the problem and expected action to be taken to curb road accidents.

From a global perspective, our findings, as articulated in the grounded theory and mechanism model, can be taken in the context of minority populations and their relations with state authorities, and hence may be applicable to other minority populations in the world.

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