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Original Article

PERCEPTIONS ON VEHICULAR FUEL CONSERVATION AMONG SELECTED RESPONDENTS IN SURAT CITY

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ABSTRACT

The study explores community notions on the need to conserve vehicular fuel usage with context to global warming among 100 randomly selected men of the age group <20 years in Surat city. Findings reveal a high degree of awareness on climate change, global warming and Greenhouse effect, however these were perceived as issues requiring state attention and not as an individual public health concern. The study explores individual and public transport system utilization patterns, advantages and constraints therefore and measures to deal with important issues to promote public transport utilization and contain global warming.

INTRODUCTION

The consensus of the overwhelming majority of scientists that climatic changes, global warming and 'Greenhouse Gases' constitute one of the greatest contemporary global challenges highlights the imperative necessity to focus on immediate ameliorative conservation measures. Escalating population, rapid urbanization and industrialization translates into rapidly increasing motorization and transportation needs. Our road transportation system in line with that of many others is almost entirely based on petrol and diesel use with recent induction of CNG and LPG and negligible electric driven vehicles with a large fleet of self owned and private commercial vehicles and the marked absence of an efficient public transport system in many cities worldwide.[1-3] Indeed our public transports suffer from several deficiencies and can no longer respond to the needs of the day.[4] Further non-motorized facilities such as separate lanes are inexistent and unplanned with consequent discouragement and hazards to non-motorized facilities.[5-6] Problems of poor vehicle and road maintenance, traffic congestion and consequent increased fuel requirements compounds the existing problem with monetary and grave environmental concerns.[7-9] Indeed it would be prudent to limit and contain fossil fuels usage in our transport systems, else we stand to face the most catastrophic consequences that will affect us all and hence the global call to reduce carbon emissions and change our lifestyles.

MATERIAL AND METHODS

The study explores the notions on the need to conserve vehicular fuel among 100 randomly selected men of the age group <20 years, belonging to predominantly middle class households, in the city of Surat with context to global warming, fossil fuel supply limitations and the need to modify their current practices for promotion of sustainable development. They were administered an interview schedule with their informed consent. The study sites comprise of the offices at Mahidharpura, Ashwini kumar, Varachha, Katargam, Mini bazaar, Adajan.

OBSERVATIONS AND DISCUSSION

The findings revealed that 93% respondents were aware of the overall notions of climate change, global warming and the Greenhouse effect consequent to human activities such as aforestation; industrialization and increased vehicular use. However, only 72% perceived this as an public health issue requiring immediate concern and just over half (58%) agreed to address this issue at their individual level. This observation points to the fact that all public health issues are not viewed as pressing health needs requiring public action. Discussions with them revealed that when it comes to action many are unwilling even to agree to the notion to take action at an individual level rather they tend to perceive this issue as requiring attention by the authorities (100%). Their perception is that this issue does not impact them directly and that they hardly contribute to the overall problem of global warming (85%). Therefore taking actions at individual level without local supports such as absence of a public rapid transport system in place would cause much inconvenience to them (87%) and that their individual contribution towards mitigation of the problem would be negligible (70%) in the absence of governmental efforts.

Besides, some had even argued the fact that the developed nations are responsible for this sorry state of affairs and hence they must own the cleanup measures rather than the citizens of developing nations. These findings point to the need for creation of increased awareness among the general population. When specially inquired as to the steps to be taken at individual level for the containment and mitigation of this problem they were aware of the need for promoting greater use of public transport (27%); minimizing use of their vehicles and pool vehicles

(14%); encouraging of others also to minimize individual vehicular use (11%); regular servicing of vehicles and or correct tyre pressures (8%); and discouraging use of plastic bags (3%). The steps at local or Gujarat state level include growing more trees (30%); promoting greater use of solar energy (28%); education & awareness programmes (21%); good public transport facility (12%) and lastly proactive pollution control boards (9%).

The respondents listed even more ways that can be taken at the national level namely growing more trees and decrease forest cutting (37%); promoting research for other sources of energy (17%); use of locally made products (13%), development of recycling plants (13%); search for better technology which reduces pollution (11%); telecasting documentary films on global warming (2%). An interesting finding was that all of the respondents agreed that improved and widened roads with good traffic management system can do much to reduce the traffic congestion and thereby save precious time, money and help abate pollution. Studies have revealed that sustainable urban energy-environment management with multiple objectives including reduction of urban traffic congestion around 10% energy savings is possible in Delhi, with consequent emission reductions of lead (33%), CO (24%), HCs (21%), SPM (17%), SO_2 (12%), NO_x (10%), and CO_2 (10%).[10] Despite their views to encourage public transport system, 50% preferred private vehicles with only 17% agreeing to use public transport system, though 33% agreed to share vehicles, commonly in educational and employment settings where their colleagues reside nearby. Some of the hurdles identified towards vehicle sharing were poor time management by the persons sharing vehicles and other complications associated with differing timings, ego clashes, perception as an unfashionable trend among youth and restriction with freedom to come and go. The respondents favouring own vehicles did so for saving time (63%), comfort (29%) and unsatisfactory public transport system (8%). Those favouring public transport systems listed 27 reasons such as fuel saving (62%); decreased pollution (23%); and traffic minimization (15%).

Suggestions to minimize personal vehicles use included utilization of public transport (44%); pooled vehicles (34%); cycles (11%) and walking (11%). Suggestions to improve fuel efficiency included regular service and proper tyre pressure (47%); improved fuel (42%); and regular changing of air filter (11%). When specifically asked 90% respondents agreed that cycling should be promoted to decrease fuel consumption with 170 responses comprising of educating people on global warming (47%) and on advantages of cycling (45%); inspiring people by cycle rallies (5%); and construction of separate lane for cycling (3%).

More than half (56%) of respondent were unaware about hybrid cars, 33% were aware of cars which use gas and electricity and the remaining 11% were aware of cars which use electricity and solar energy. When specifically quizzed, the majority agreed to promote battery driven cars (89%) and solar driven cars (83%) to decrease fuel consumption and global warming. These 89 respondents listed 153 ways to promote use of battery driven cars, namely decreased to nil taxation (99%); education and demonstration (50%); lower cost (40%) and importing technology (5%). The 83 respondents listed 144 ways to promote use of solar driven cars alike those for battery driven cars. These 83 respondents gave 218 reasons for promoting use of solar driven cars, namely prevention of pollution (37%); fuel conservation (33%); and ample availability of sunlight in our country (30%) and similar views were expressed for promoting use of battery driven cars. Studies have revealed that that monetary incentives or differential taxation of drivers can modify the choice of car fuel type, especially for those driving long kilometers using logit model with correction for possible selectivity bias and confirmed by structural models.[11]

Almost all (98%) of the respondents agreed that fuels are often adulterated either when supplied by the petrol outlets or by the three wheelers with Kerosene in areas where CNG is not used and that cleaner fuels will imply lower environmental pollution, however only (35%) had ever taken any step in their lifetime to help ensure cleaner fuels. Majority (82%) of the respondents had some preferred fueling station(s), which was perceived by them to supply clean fuel. These perceptions were related to Petrol and Diesel supply only. In the case of CNG adulteration was not perceived as an important issue as the respondents perceived that this fuel cannot be easily adulterated. In the case of CNG supply they went to the nearest fueling station. Though 5% respondents mentioned that CNG supplied by different companies did give varying mileage per Kilolitre, however CNG suppliers in a city are usually fixed and not much choices are available in many cities.

Interestingly these 100 respondents had possessed a total of 148 petrol driven two wheelers, predominantly for office use (58.8%); regular/ mixed use (33.8%); and domestic use (7.4%). These observations point to the fact that there is ample scope for promotion of LPG vehicles in India. Studies in India have revealed that with the use of LPG in spark ignition four stroke outboard engines specific fuel consumption and CO emissions are much lower without noticeable power loss.[12] The maximum numbers (43.2%) were getting their vehicles serviced at an interval of 6 months and 58.1% of these were motor cycles. Alike the two wheelers the majority (68.7%) were getting their cars serviced at an interval of 6 months. The importance of regular servicing

cannot be over emphasized as studies have clearly documented the association between poor vehicle maintenance and air pollution.[13]

The studied respondents also possessed 67 cars, predominantly CNG driven cars (44.8%); petrol cars (34.3%); LPG cars (13.4%) and Diesel cars (7.5%). Alike the two wheelers these were mainly used for office work (58.2%). However instead of mixed/ regular use the second category comprised of domestic use (22.4%), as some preferred a two wheeler for regular use. Here again we can find the preponderance of petrol driven cars compared to CNG powered cars highlighting the fact that still there is ample scope for fuel substitution and perhaps we ought to promote companies to have built in CNG kits as opined by the respondents. Studies have reported that in general, LPG is a 'cleaner' fuel than unleaded petrol, although in most cases, the differences were not statistically significant owing to the large variations between emissions from different vehicles.[14] Further, Sulfur content in diesel fuels has been documented as one of the main factors in worsening local air quality[15] and current taxation mechanisms favour Diesel vehicle for motorists with long kilometers requirements. This aspect ought to be seriously studied in environmental context.

From the study we conclude that nearly all of the respondents were aware about the problem of climate change, global warming and the Greenhouse effect. They had opined that global warming could be reduced and could suggest steps at individual, state and the national level. They were also aware of the need for promoting greater use of public transport, albeit without translation into practice due to perceived inefficient public transport system. Multiple vehicular ownership implies the accompanying need to curb inefficient fuels and avoidable use. The awareness was lower as relates to hybrid cars and that is understandable given its virtual absence in India. The study reveals that people seem to be responsive to ideas like greater cycling; use of public transport systems; pooling of vehicles; hybrid cars provided such types of acts are facilitated. From the study we surmise that rather than awareness generation, we need to move into the era of facilitation.

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