



Housing Related Problems in Saudi Arabia: Residents Perception and Opinions Towards Their New Dwellings and Residential Areas

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Abstract:

The main goal of the study is to identify problems related to the new dwellings and residential areas in the major cities of Eastern Region of Saudi Arabia, Dammam, Khobar, and Dhahran. Also we need to examine residents' opinions towards their houses and aspiration regarding the future. The study consists of five main parts: The first part contains background and housing review, the second contains methodology of the field survey, the third shows the data analysis, the fourth contains the findings, and the fifth contains the conclusion and the recommendations.

1. Background and Housing Review:

Saudi Arabia is developing very rapidly. Old villages are becoming large cities in the short span of a generation and new cities are being established. The general population is becoming rapidly urbanized. An entirely new environment is being created.

In the rush to modernize, the Kingdom of Saudi Arabia, which is experiencing rapid economic and urban development, has adopted the concepts and solutions from the industrialized nations, which have either ignored or have often failed to take into consideration the special needs of a particular culture. In Saudi Arabia today there is a conflict

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between the need for rapid development and the need for continuity of the cultural characteristics which are unique to that country.

These changes have also had enormous impact on the architectural development which is presently passing through a critical stage of its history in Saudi Arabia. The prevailing architectural style is cosmopolitan in character and it is possible to observe today Western houses, which are clearly inappropriate in an Arab Islamic country, Earls (1981:16) has stated:

The traditional house is being replaced by tower blocks of apartments and villas, which would be more at home in Amsterdam or Stockholm than in Saudi Arabia. They are exposed on all sides. They lost much of the traditional dwelling characteristics.(Figure:1)

According to Ebn Saleh (1980:2) recent housing construction in Saudi Arabia has lost its traditional identity and has become a hybrid of an exotic character in its architectural forms, main concepts, arrangement of spaces, organization of elements and building techniques employed. The new architecture has been developed without any relationship to the past. It is based on adopted alien ideas which are unsympathetic to the tradition of the people they serve, as Talib (1982) has stated:

The link between the past and present is broken as completely alien forms of housing are imported without any consideration to the past. A kind of circus performance is taking place in architecture. Some of the best performers among architects are doing best in an arena where the limits are set by the performers themselves. Thus, meaningless acrobatics in architecture are performed under the guise of modern architecture or technological advance (p. 10).Wabli (2003) indicated that any technological advance much takes in account the physical and socio-cultural aspects relevant to housing.

The contemporary dwelling unit in Saudi Arabia no longer accommodates traditional concern for privacy and family life. Urbanized areas are alien to the cultural experiences of most of their inhabitants. Traditional social relationships as expressed through buildings and urban design have been abandoned for imported styles more appropriate to Westernized cultural life (Mostafa, 1987:56).

In the new residential districts the most glaring examples of this situation are evident in the so called "villa" developments, as housing form which is now very popular in all Saudi Arabian cities. The villa is the complete antithesis of traditional courtyard model, which has been the basis of Arab housing for hundreds of years.(Fig.2and3).



Fig. 1- Typical high rise apartment buildings constructed in the major cities of Saudi Arabia. The conception, design and structure of these housing projects, based on imported concepts and different cultural values

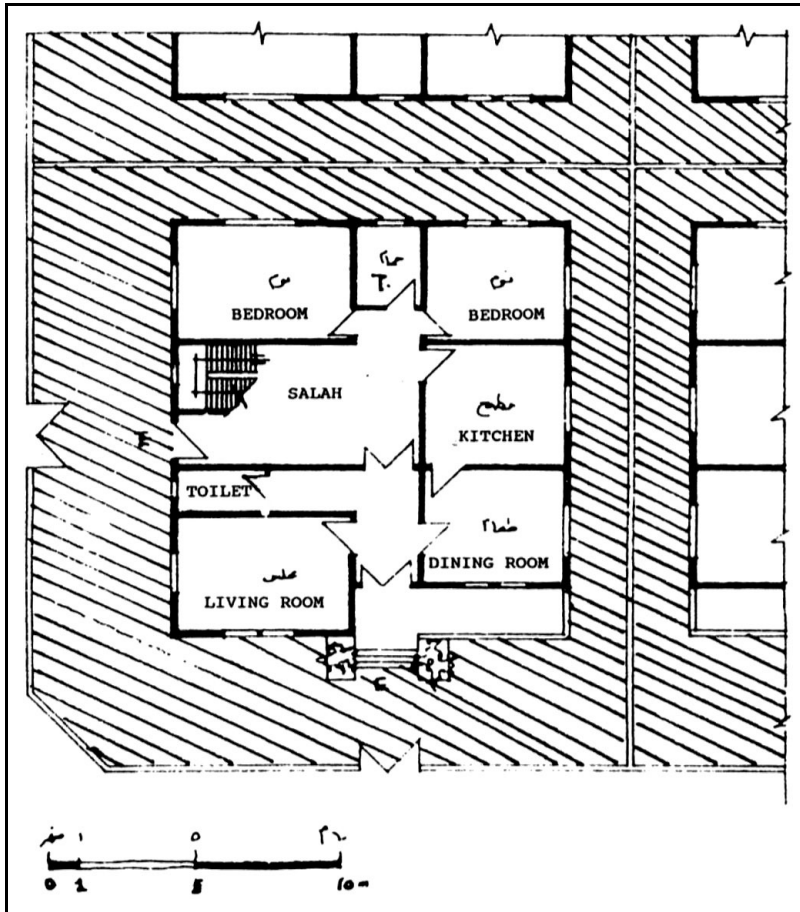


Fig. 2- The traditional courtyard concept has been replaced by extroverted houses in the middle of the lots, surrounded by set-backs

Faden (1977:10) pointed out that, rapid change in Saudi Arabia made it hard to determine priorities for the populace, especially in terms of residential environments. The country had faced confusion, contradictions and poor communication among the government ministries and foreign consultants associated with the pressures of Saudi Arabia's rapid development. A sense of urgency, hasty introduction of advanced technology, mismanagement and waste in

all aspects of the development process (money, natural resources, and effort) are significant characteristics of the kind of confusion (see also Altasan 1986:1).

The government of Saudi Arabia appears to have succeeded in constructing the largest number of dwelling units ever known in the country within a short period of time. However, the housing situation in Saudi Arabia is not just concerned with increasing the number of new dwelling units. There is a public perception that other measures should be given higher priority based on qualitative considerations. As was stated by Altasan (1986), much remains to be accomplished, if we measure the standard of new housing in Saudi Arabia not only by its ability to meet the residents' requirements for physical comfort, but also to fulfill the social and cultural needs.(see also,Alqahtani 2006)

Islam is deeply rooted in Saudi society and it is more than a religion, it is a culture, a way of life and a way of defining the rules of the government. The Quran⁽¹⁾ is the constitution of the country and Shari'ah⁽²⁾ is the basis of its legal system. The Saudi people have inherited a culture which is strongly influenced by the religion of Islam. It is their belief that the teachings of the Holy Quran and Al-Hadith⁽³⁾ (sayings of the Prophet) are the best guide for daily living. This religious influence is, in turn, reflected in the physical structure of the society, the house design and construction in a way which defines the personality, local, social and cultural identity of the inhabitants. For example, the separation of sexes and privacy are two of the most important characteristics of Islamic culture and these characteristics are not often clearly discernible in contemporary housing in Saudi Arabia.

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- (1) Quran: The recital or reading. Name of the sacred scripture of Islam, believed communicated verbatim to Mohammed and recited by him to his hearers and recorded for their recitation on 114 Surahs or Chapters.
 - (2) Shari'ah: Sacred law, grounded in the will of God and given in the Qur'an tradition. It is the law of Islam, which governs all aspects of the daily and religious life of believers. See Serageldin, et al (1979).
 - (3) Al-Hadith: Report and record of the activities and teachings of the prophet Mohammed (peace be upon him).

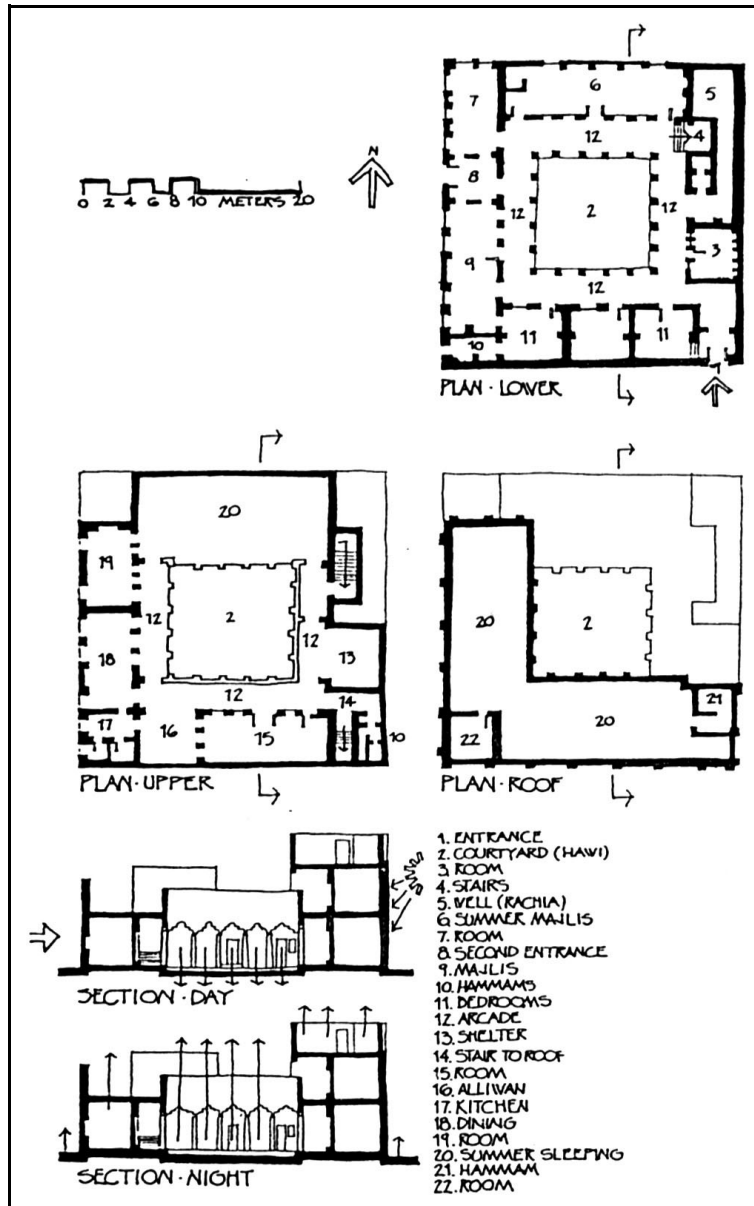


Fig. 3- Traditional courtyard house model in Saudi Arabi

The rapid changes in the living environments that are taking place in Saudi Arabia call for an increased awareness of the contemporary dwelling unit and residential environment. Assessment of the newly built housing remains a task of great importance⁽⁴⁾. There is a need to provide guidance for design of new housing based on enhancing, invoking, and preserving environmental, cultural and aesthetical values within the housing environment. Ismail (2006) stressed on the previous issues as fundamental issues in the design of houses.

This research will attempt to provide a reference for understanding and coping with the housing problems in Saudi Arabia, in order to establish a suitable context for the design of new housing and residential areas. Accordingly, this study aims to achieve the following objectives:

- 1 - To identify problems of modern housing which is associated with the construction development in Saudi Arabia.
- 2 - To examine, through a people-environmental framework, the residents' opinions and attitudes with respect to their residential setting.
- 3 - Finally, to apply the knowledge gained from this study by formulating guidelines and recommendations, which one hopes, will assist decision makers, architects and planners in the planning for appropriate future housing in Saudi Arabia.

2. Research Methods:

In order to achieve the objectives of this study the methods employed include: a review of literature and available data, site visits

(4) As expressed in the United Nations Conference on Human Settlements (1986). Reassessment of housing and the environment being created is necessary. New developments may provide focus by their architectural interpretation of Islamic qualities and culture, as well as an example of urban and architectural values.

and field observations, interviews and questionnaires conducted with the heads of households in selected new dwellings.

They also include personal interviews conducted with government officials and authorities as well as architects, planners, real estate owners and the public. This part of personal interviews represents the non - systematic technique of the study. It has provided very useful information in supporting other data collected from the residents' survey. Several factors have influenced the decision to employ the aforementioned multiple information gathering methods. They are:

- 1 - Reliance on one particular method to obtain information needed for this study might have a greater chance of risk, especially when taking into account the social and cultural considerations of the region such as male female interview restrictions, the individual's privacy, and illiteracy.
- 2 - Use of multiple information-gathering methods would allow the weaknesses of one method to be partially compensated by the strength of another method (After Friedman, Zimring, Zube 1978:196).
- 3 - Employment of multi-method approach to meet the same objective will allow cross-checking of information and increase the research yield, as stated by Webb (1966:3) "Once a proposition has been confirmed by two or more measurement processes, the uncertainty of its interpretation is greatly reduced"(After Alsaati 1987).

The component of empirical research was generated from a field work and interviews conducted for the purpose of collecting the required data. The field work took place during the summer of 2006. It was divided into two stages. The purpose of the second stage of the fieldwork was to conduct the main survey and to collect all the needed information for the study. The residents survey consists of a structured interview with the households living in new urban areas drawn from three cities Dammam, Khobar, Dhahran (Eastern Region). Ten

student from the college of Architecture and Planning were trained to assist and conduct the required questionnaires.

2.1 Survey Techniques:

As an integral part of this research, heads of households of the selected new dwellings were interviewed in person. The purpose of conducting these interviews was to examine the effects on social interaction and the resident's perceptions and opinions of their dwellings and residential environment. It is very important to obtain a good representative sample and to word questions properly to avoid failure in the validity of the results. The information that are obtained by surveys is divided into three categories (Hariri, 1986:99):

- 1 - Opinions on questions;
- 2 - Attitudes towards basic topics;
- 3 - Facts about the people being interviewed.

Before conducting the proposed survey it was very important to decide what were the accessible methods and the mode by which the survey was to be carried out. Among the possible methods were the mail-in questionnaire interviewing procedures, the telephone interview and the personal interview with the occupants. Experiences of some investigators who have conducted similar research have indicated that mail-in questionnaire and telephone interview methods have proved inefficient, due to their low response rate. See (Al saati (1987), Farsy (1982), Altasan (1986), and Hariri (1986)).

It is therefore clear that mail-in questionnaires and telephone contact methods of conducting the proposed survey are not recommended in Saudi Arabia. Most of the previous studies have recommended personal interviews with the heads of the household, usually in his dwelling unit, because this method produces a high response rate and motivating procedure. Also the presence of the interviewer is likely to increase the chance of establishing a better rapport with the informants and thus clarify confusing matters, and

obtain relevant responses. Therefore, the decision was made to conduct the proposed questionnaire using (face-to-face interviews). This would hopefully reduce "no-answers", which can be attributed to misunderstanding of the questionnaire, and any bias could also be identified by the interviewer.

In general, the questionnaire was designed with a selection of fixed alternative and open-ended questions. It was designed to collect data regarding the following:

- 1 - background information and the residents demographic characteristics, including sex, age, education level, occupation, family income and family structure; and
- 2 - information about the occupancy status. Reasons for moving from previous dwellings, length of residence at the present home and reasons for choosing the present neighborhood;
- 3 - perceptual information including the residents' attitudes with respect to the social and physical environment of their previous and present dwellings, and their evaluation of the new neighbourhoods;
- 4 - finally, it concluded with questions dealing with the respondents' prospects and expectations about their dwellings and residential environment.

2.2 Selection of Study Area:

Since this study is concerned primarily with evaluating the new dwellings and new residential areas, a considerable amount of time and effort was devoted to the investigation of appropriate areas to be surveyed. Eastern region was chosen as the study area which clearly satisfied these criteria. The study sample was drawn from three cities, Dammam, Khobar, and Dhahran (classified and precoded as area A, B, and C) (Fig.4,5). Limiting the study to the Eastern region raises the question of representation, or to what extent the chosen area was

representative of the total population. The main reasons for limiting this study to the Eastern region were:

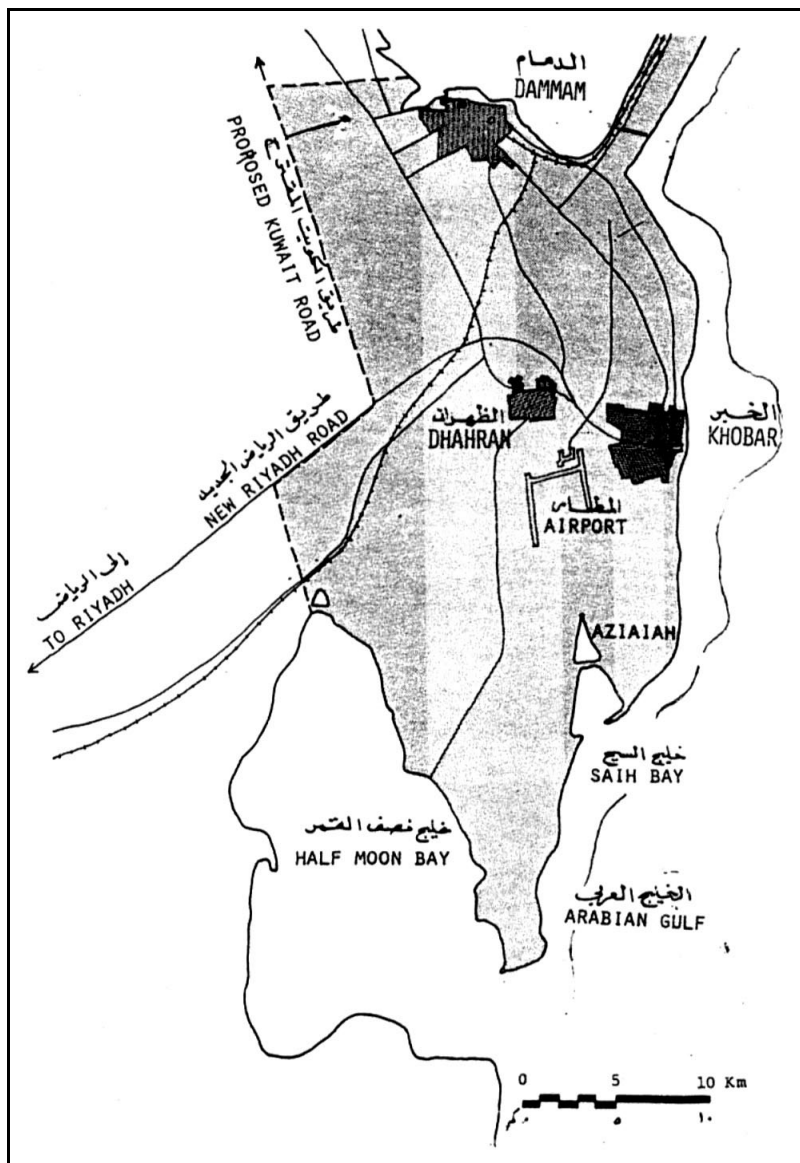
- a - Limiting the study population to particular areas makes it more feasible, especially when considering the limited resources that were available to the researcher (e.g. time, money, manpower, etc.);
- b - Eastern region was deemed to be a good representative study area due to the fact that this region is developing very fast and meeting the objectives of this study.

2.3 Sample Size and Sampling Method:

An obvious phenomenon in sampling surveys is that too large a sample implies a waste of resources, while too small a sample diminishes the utility of the results. What, therefore, is the sample size that accurately and fairly represents for this study? A large sample size was beyond the scope and nature of this present study, especially when considering the limited resources available to the researcher.

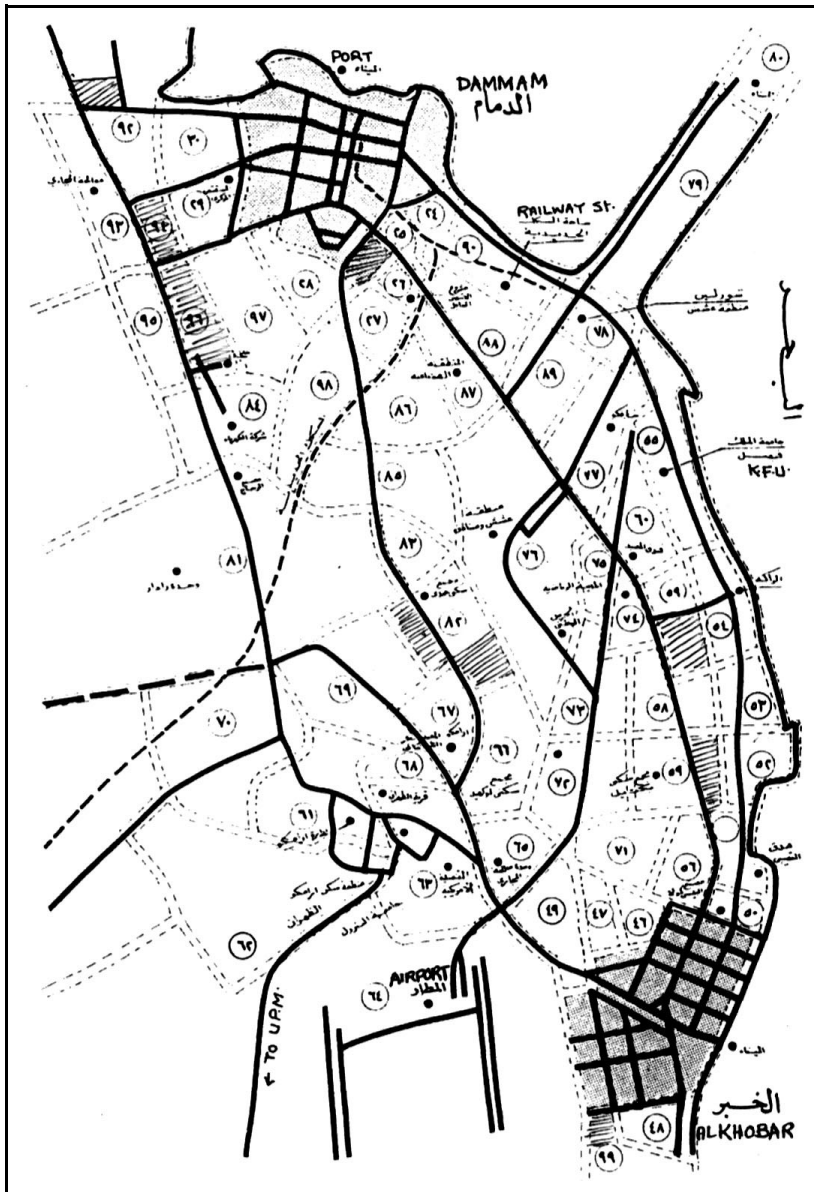
Purche (1964) has pointed out that the accuracy of the enquiry will depend primarily upon the representative quality of the sample. In a homogeneous population the sample may be extremely small. Since the location of the study areas was selected in the Eastern region, a considerable effort was devoted to the selection of dwelling units and the sampling procedure. One hundred sixty five units were chosen and assigned by using a random sampling method. Carefully selected samples were made. The eligibility of the selected houses was determined by the following steps:

- 1 - Preliminary selection of the dwelling units from the target population was verified using the available documents, site plans and aerial views.



Source: Dammam Municipality

Fig. 4 - Location of the three cities, Khobar, Dammam, and Dahrhan (Study Areas)



Source: Damman Municipality

Fig. 5 - Typical New Plans in the Study Area

- 2 - Preliminary investigations and visits to the selected areas were made at different times for the purpose of general observation.
- 3 - A check was made to all of the selected dwellings in order to identify each one on the provided architectural drawings and plans.
- 4 - Several people employed to assist the researcher for defining the sample. Among them government officials in Dammam Municipality, and friends living in the proposed study areas.
- 5 - An early communication with the heads of households of the selected dwelling units was made. The major concern was to verify the eligibility of the selected groups and to obtain approval to conduct the survey. This was done by a short visit to the doorstep of each selected house in the belief that this method would provide a complete and accurate sampling procedure. Out of 165 selected dwelling units, only 121 questionnaires were completed, or about 75% of all the selected dwellings.

3. Data Analysis:

Upon the collection of answered questionnaires, all the data were prepared and coded. Data were transcribed using a coding form before they were entered into the computer. Once the coding and classification process was completed, the statistical package SPSSX-VAX for Social Science was utilized for the purpose of analyzing the data. All data were entered in a combined form, that is, for all study areas at once. Analyses have also been done by individual location and in a combined form.

Presentation and analysis of data involved frequency distributions of the responses. As a descriptive statistic, this process was very helpful in presenting data in a simplified way. In other words, frequency distributions gave observed values in a grouped or classified form according to numerical magnitudes with respect to particular traits under investigation.

In order to probe more deeply into the meaning of some key questions, additional computer analyses were conducted. These included correlations and cross-tabulation analyses which were needed to discover and test possible relationships between relevant variables. The former coefficient of correlation described the relationship or degree of association between the independent and dependent variable. The latter, with the "Chi-square" distribution, described the expected pattern of behavior that could reasonably be attributed to chance selection in the sampling phase.

Interpretation of statistical analyses depended on careful scrutiny of the presence or absence of a relationship between variables. For instance, where the observed value ($X^2 \leq f_o$) was lower of equal then the expected value ($x_2 > f_e$), for the same degrees of freedom and levels of significance, the two variables compared were accepted and considered to be independent of each other. On the other hand, where the observed value was greater than the expected value, the presence of a relationship between variables was rejected and hence interpreted accordingly.

3.1 Housing Related Problems:

The findings of the field survey have indicated that there were several problems related to the dwellings, as well as the immediate neighborhood. In this part, it is proposed to examine these problems in the light of how respondents perceived them during the course of living in their new housing areas. It is thought that the residents' demographic characteristics need to be discussed before addressing these problems. In order to understand certain attitudes and perceptions of people, it is important to draw some insights into the demographic and socioeconomic characteristics of the targeted people, and how these characteristics are interrelated.

The average family size as analyzed from the population of this study was 6.2. This figure is somewhat lower than the figure of 7.2 person per household presented by a national survey which was undertaken in 2000-01 (Central Department of Statistics). Our findings indicated that the size of the families range from 3 to 15 persons, as the

maximum number of household members. Most of the population samples were from families between 6 and 8 persons (78 percent). Nearly half of the population (49 percent) was under 18 years of age.

There were noticeable differences among the respondents concerning the household income, which varied from low to middle and high income groups. The majority of the study showed that the households (66 percent) were from the upper middle and high income groups).

The findings also reveal differences in the respondents' educational levels. Those who had completed some university education or bachelor degree represented about 37 percent of the total respondents; While those who had no degree represented 25 percent. The possible interrelationship between residents' characteristics was investigated by performing a number of various statistical tests. Significant findings were found worthy of discussion. The first finding was that a positive significant correlation was observed between the age of the head of the family and his annual income ($r = .2732$ and $P < 0.0001$). The analysis also showed that most of the younger people aged 30 or less were classified as heads of relatively low income families.

The second statistically significant finding was that, as one would expect, the age of the head of the family was found highly correlated with the total family size ($r = .5617$ and $p = .0001$). It was also found that the age of the head of the family was significantly correlated with the number of children of school age ($r = .1392$ and $p = .0043$). In addition, it was observed that significant association exists between age group and the education attainment ($P < 0.05$). Those who have no degree represent high percentage among the older respondents, compared to none among younger individuals. Respectively, those who hold a college degree represent three out of every six among younger respondents, compared to very few (3 percent) among older individuals. This might suggest that age and educational attainment are related. Finally, it was found that the higher the educational level of a head of a household implies, in general, a lesser family size ($r = -.2537$ and $P < 0.0001$).

3.1.1 Problems Related to the Dwellings:

This part of the study will examine the problems related to the new dwelling through the occupants' evaluation and assessments. Areas of concern were related to: design problems, privacy problems, climatic protection, maintenance and low standards of construction.

3.1.1.1 Design Related Problems:

In recent residential developments in Saudi Arabia, the classic villa-type house has been accepted as the standard house type. The unfamiliarity of most designers with the local cultural and social values of Saudi society is evident in the poor quality of the dwelling floor plans (Fig.6,7). More than half the respondents (57 percent) thought it would be impossible for the dwellings to accommodate some of their needs because of the way their dwellings were designed and constructed. For example, some respondents said it was difficult to add an extra room or to enlarge the reception area in their dwellings.

Although the new dwellings benefited from the most modern mechanical devices and furniture available in Saudi Arabia and the instant construction process, the living spaces created in these houses were found to be inflexible, where rooms had become specialized in function, with differentiated domestic activities carried out in specific spaces. There were no areas where family outdoor activities could take place. Children were commonly found playing in the corridors, stairs and small spaces at the rear of the dwellings. Just under half of the respondents (44 percent) mentioned that their dwellings lacked a designated area inside the house for children's play activities.

When respondents were asked whether they made changes to deal with the previous design and privacy related problems and improve the quality of their environment, the majority of them (80 percent) said "yes". Nearly 65 percent of them added height to the

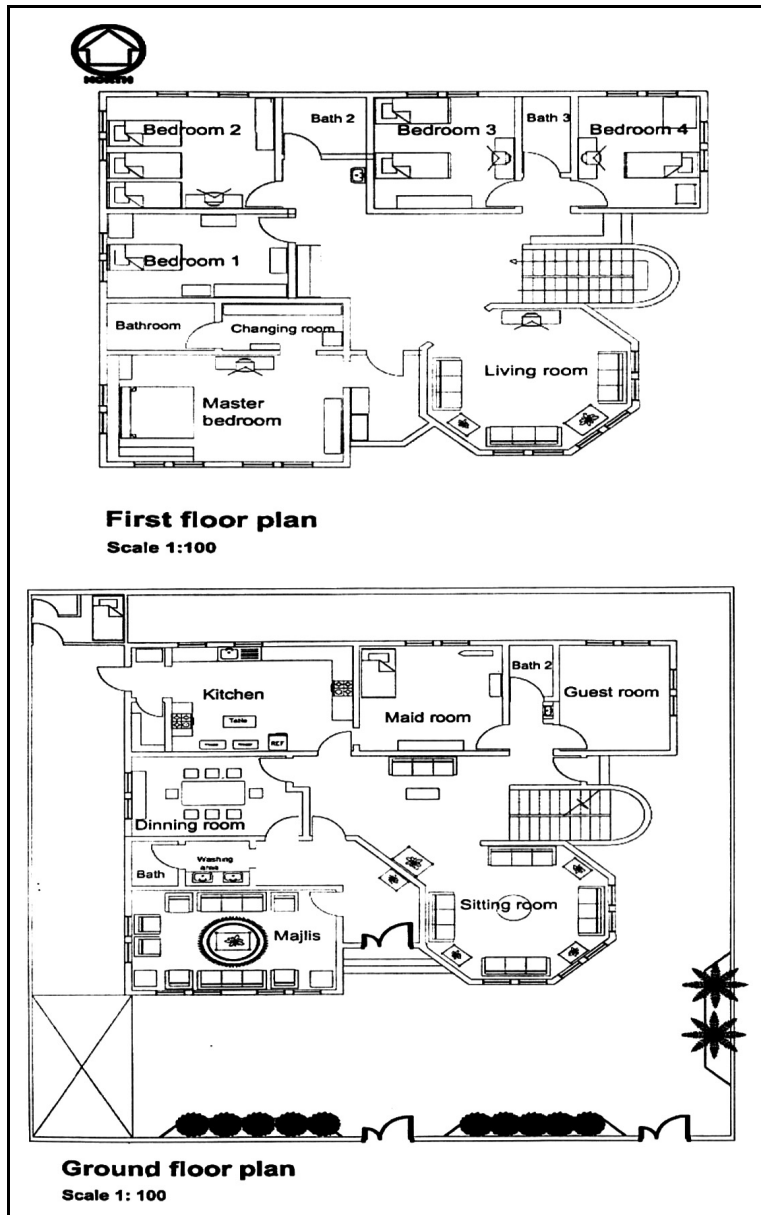


Fig. 6 - Ground and First Floor Plans of a New Villa

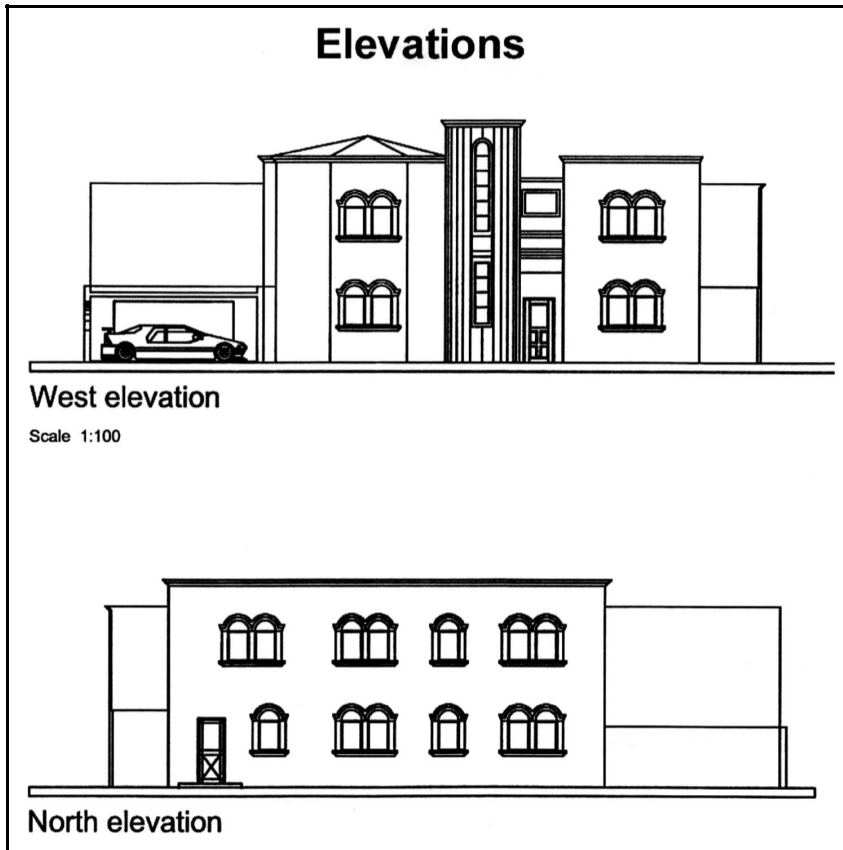


Fig. 7 - Typical Facades of New Villa

surrounding fence to deal with the overlooking problems. More than half of the respondents, a significant number (64 percent), arranged their living space by demolishing or adding new sections to suit their present and changing needs. A little less than 50 percent of the respondents remodeled or blocked in their balconies. Some occupants had increased the room space by adding wood screens, others constructed additional toilets in the balcony area. Also, nearly one-fourth (21 percent) of the respondents added another entrance to

accommodate females. Finally, very few (6 percent) added extra height to the roof parapet in order to provide more private space. This implies that designers should give special consideration to the socio-religious need for privacy(See also,Aloweid 2004).

All the studied dwellings were surrounded by small yards created by the city code regulation which stated that all four sides were to be set back from the property lines(Fig.8). These yards were enclosed within a high wall for privacy and protection, but were largely unused most of the time as indicated by the majority of the respondents (68 percent).

Among the reasons given for not using the yards were the inefficiency of these yards due to the small width. Others mentioned their lack of privacy and their potential for generating tension between neighbours if overlooked. They were also exposed to the harsh climate which made them unbearably hot during summer. The common function of these spaces was storage, as mentioned by most of the respondents.

3.1.1.2 - Privacy Problems:

Almost every household in every society requires a certain level of privacy. Visual as well as physical privacy receives varying emphasis according to the background of the society. In Saudi society, privacy plays a major role in the people's lifestyles. Results of the survey had clearly shown that the socio-religious need for privacy was by far the most influential cultural factor in shaping the desired physical form and design of the home in Saudi Arabia. The study also showed that new houses (villas) had been built with little concern for family privacy. The findings of the field surveys indicated that the lack of privacy in most of the dwellings studied was often a source of dissatisfaction for those who live in these dwellings.

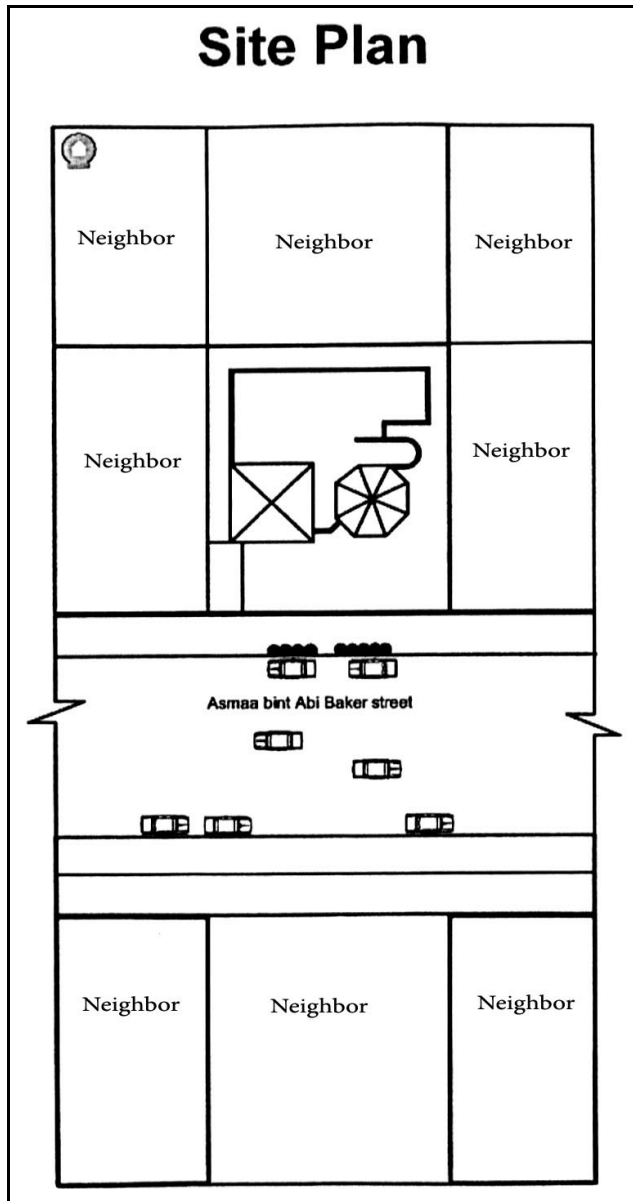


Fig. 8 - Set Back Requirements by the City Code Regulations are Evident in the Design of New Dwellings

In fact, the new house design plans completely ignore the user's desire for privacy. In most cases, looking into someone's yard, balcony, or through windows was possible. It was the intention of this study to see how the occupants experienced such problems. Several questions were addressed to the respondents during the interview. The majority of our respondents (87 percent) were experiencing privacy problems either physically or acoustically.

More than 79 percent of the respondents mentioned that the large open windows in most sides of the dwellings allowed complete intrusion by neighbors. Nearly 89 percent of the residents mentioned that they were having problems with neighbours looking into their yards or through balconies. Yards and balconies were generally in full view of neighboring houses and were unsuitable for family activities. A little more than 60 percent indicated the lack of separation between male guests and female sections of the home. Nearly 59 percent of the respondents said, when the entrance door is opened, it was easy to view the interior spaces. The lack of visual privacy, both inside and outside the residential environment, was a source of discomfort for most of the respondents.

3.1.1.3 - Climatic Protection:

Adaptation to climatic conditions and constraints was another common problem related to the new dwellings. Most of the dwellings studied were designed with little consideration for the local climate; thus an uncomfortable environment was created inside the house. In spite of the harsh climate and intense solar radiation; our observations have shown that all of these dwellings were detached, They had the maximum area exposed to direct solar radiation and they had largely climatically unprotected windows. No effort had been made to provide natural ventilation, and because of the hot atmosphere, the windows cannot be opened during the day.

Most of these dwellings were extrovert and open to a surrounding yard. These yards lacked any protection against climatic forces; consequently, most of the occupants did not use the surrounding yards, especially in the summer. Roofs were not shaded from the intense summer solar heat, and more importantly, the exterior walls were not well - insulated to resist the quick heat and cold transmission. Most of the respondents (76 percent), a significant number, thought that it was very hot in the summer and too cold in the winter months. They were forced to rely on mechanical devices, such as air conditioning units for cooling in the summer, and heating equipment to cope with the cold weather in winter periods.

Most of the respondents were convinced of the need for complete dependence on air conditioning systems. It was evident that the designs of these dwellings were basically intended for full dependence on mechanical devices in controlling and regulating the inside climatic conditions. Affordable electro-mechanical means of climatic control led to less attention being paid to the potential of the building fabric as a climate modifier.

Another worth mentioning problem was the lack of proper ventilation and natural illumination in some of the respondents dwellings. Nearly 33 percent of the residents were having the previous problem. The lack of natural light was due to individuals who chose to close the large exterior openings in order to cope with the dust problem and privacy problems.

According to the empirical data, a very clear homogeneity was observed among the respondents concerning their assessment of the importance of climatic comfort within the home. No significance of the effect of any of the resident's personal characteristics on their perception of the housing climatic comfort when looking for a new house to live in.

3.1.1.4 -Maintenance and Standard of Construction:

There were also noticeable problems related to maintenance and construction quality of some of the studied dwellings. It was common to see cracks in the walls and there were water leakage problems, and the quality of the utilities installation and networks was not satisfactory for some dwellings. Some of the respondents were forced to put in a new plumbing system. This was due to poor installation and poor construction work by unskilled and unqualified workers, away from the control of the related authorities, such as the local municipalities and the Real Estate Development Fund. However, the general condition of most dwellings, as observed from outside were satisfactory. Strict enforcement of building codes by establishing standard specifications seems a task of positive effect on the quality of housing.

3.1.2 The Neighborhood Related Problems:

Several problems related to the immediate neighborhood surrounding the respondent's dwellings were recorded during the interview. These problems include the following: children's play area; street related problems; lack of community services; lack of calmness; aspects related to the mosque; and parking related problems. Some comments were made by the respondents during the survey and will be used in future analysis. It was hoped that such informal comments would be useful in providing additional means of evaluation.

3.1.2.1 - Children's Play Areas:

The availability and safety of play areas for children are usually considered very important by our respondents, who preferred that their children always play close to their residences. Based on the field observations and interviews with the residents, children's play activities were completely ignored by the planners. No provision for

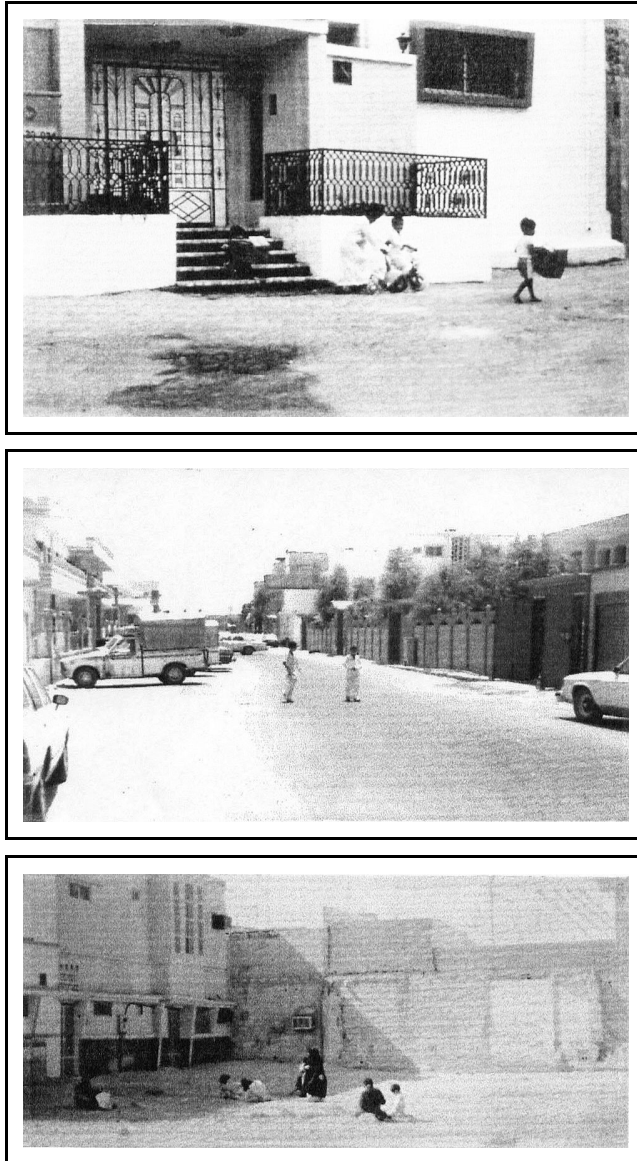
children's areas was specified or indicated in the master plans of the studied areas.

It was therefore not surprising that when the respondents were asked about the availability of children's play areas, the majority (98 percent) indicated that the neighborhood spaces did not provide any type of children's play areas. When respondents were asked, "where do children usually gather and play"?. The majority (about 68 percent) indicated that children usually play in streets near their homes (Fig.9). Vacant nearby lands were mentioned by nearly 17 percent, while parking areas were mentioned by 12 percent. Very few (about 3 percent) said the neighborhood park was the only safe place for their children to play outside dwellings.

General comments were made by most of our respondents during the interviews. Among those comments were the following:

- I always encourage my children to play inside my house, in the yards surrounding the dwelling. It is safe for them there.
- The safety of children was not considered in this neighborhood, my children usually play in the nearby park.
- My children are always unsafe from the passing automobiles. They are in real danger.
- It is impossible for my children to play inside the dwelling unit because they might create noise and disturbance to the residents and neighbors.

During the observation we noticed that most of the children's activities occurred in the streets or vacant lots near their homes. Most of these areas were unsuitable places for such activities for they were unclean and muddy and, therefore, unhealthy. The danger of traffic was also possible.



**Fig. 9 - Typical children play areas in the new settlements.
The lack of playgrounds forces some children to use the main
streets and vacant lots as their play areas**

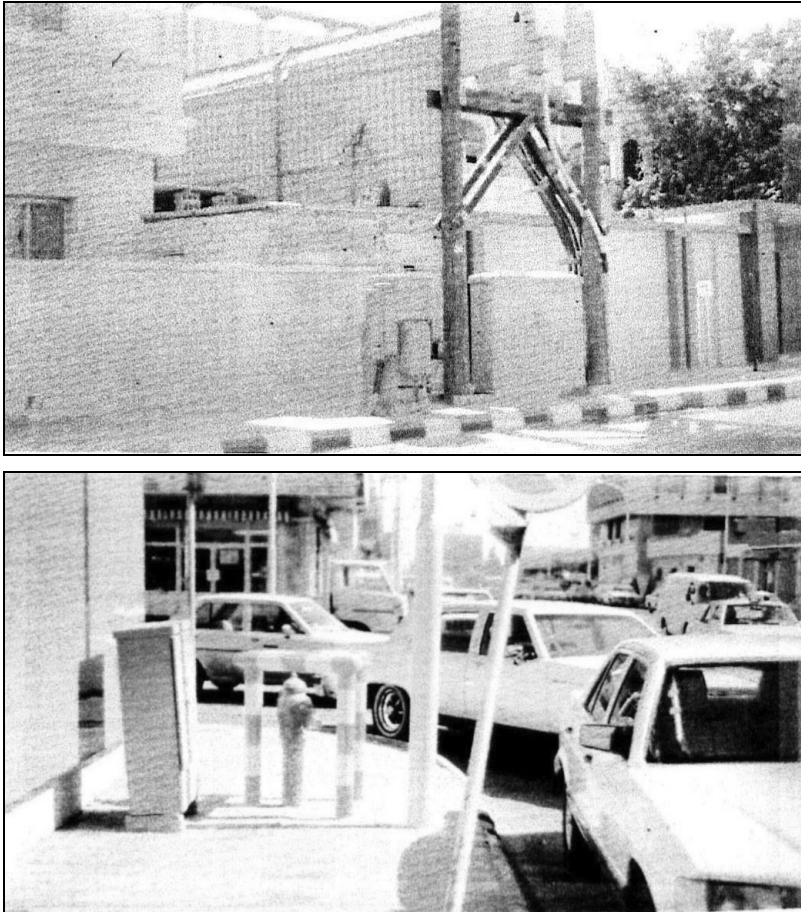
3.1.2.2 -Street Related Problems:

Several problems related to the streets in contemporary dwelling areas were identified. During the observation it was observed that streets were designed without any consideration for safety and social interaction between residents. The streets were undefined, mixed with walkways, and therefore unsafe. It was common to find objects in the middle of walkways, such as telephones, electricity boxes and traffic signs. Most of the respondents perceived the streets in their neighborhood to be in poor condition (Fig.10).

It was also observed that the streets' dimensions had been dictated by automobiles and were more convenient for the vehicles rather than for human beings, making it dangerous for pedestrians. The new street pattern was wide and straight. Each dwelling unit was only a separate portion of an endless wide street, usually without appropriate orientation. In contrast, the street patterns around the traditional dwellings of the respondents were often curved and well-directed in such a way as to reflect and promote the variety, strong contacts and positive relationships within the community. The street pattern was characterized, overall, by sudden changes. The entire design was on a human scale (Fig.11).

Most of the respondents (78 percent) were unhappy about the present situation of street-related conditions such as pedestrian walkways, unpaved streets surrounding some of the respondents' dwellings, street lighting, landscaping, and the amount of protection from sun heat. However, the occupants were very optimistic and believed that some of these shortcomings were temporary and were clearly to be overcome by local municipalities in the near future. The extent to which any of these shortcomings were causing serious problems to respondents was not sought. Instead, we relied on comments offered by the occupants themselves. Typical of these were:

- I feel unsafe. The streets mix with the walkways.
- II Passing cars are very dangerous.



**Fig. 10 - Typical walkways in the contemporary neighbourhood.
Objects such as signs, electricity box, etc. are common,
these services took place after most of the
dwellings were built and occupied**

The contemporary walkways discourage residents and people to use them. They are unpaved, very small and non-existent in some areas.

Streets are in poor condition, lighting of streets does not exist in my area. I can't even walk to the corner shop at night because it is dark and unsafe.

I hope that the authorities learn some lessons from the traditional street patterns to suit contemporary living needs.

Re-evaluation of present street planning and services need to be considered highly in new residential plans as indicated by the Higher Committee for Riyadh Development(2004).

3.1.2.3 Lack of Community Services:

Among the three residential areas visited and investigated, the condition of the public facilities in area (A) seemed to be the most generous. The availability of adequate mosques, shopping facilities and educational facilities were obvious. This was attributed to the fact that in area (A) construction started more than ten years ago. Therefore, most of the services were nearly complete.

Generally, the lack of adequate community services forced the residents to establish some facilities themselves to serve the people living in the community. The emergence of services to meet the residents' daily or weekly needs such as corner shops, laundries, barber shops, super-markets and butcher shops in different parts of the neighborhood, were an indication of inadequacy of community services.

Surprisingly, most of these basic services were established without municipal approval. The residents normally transformed some parts of the dwelling units, usually the garage space, and converted them to one of the above mentioned services. One respondent commented on this:

Most of these dwellings were constructed without any consideration of the availability of services. Therefore, when the residents moved into their new houses and after a short period of occupancy they started to establish the needed services because they were in desperate need of such facilities.

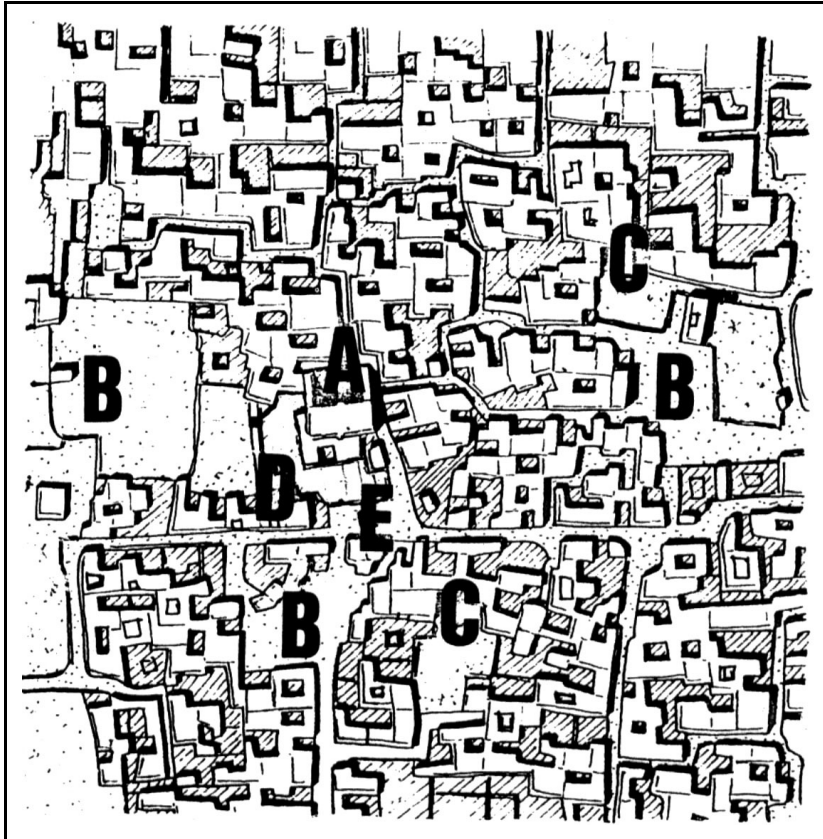


Fig. 11 - This shows that the traditional neighbourhood pattern was organized with a hierarchy of spaces from private to general public according to the size of the group of people and the degree of privacy needed.

Hail traditional town - Saudi Arabia

- A. Mosque
- B. Men's Gathering Area
- C. Women's Gathering Area
- D. Suq (Market Place)
- E. Open air Majlis for men

Our findings indicated that nearly half of the respondents (47 percent) still perceive the services in their neighborhoods to be

inadequate. Lack of street lighting, pavements and sewage system was also evident, because most of the dwellings were built before the completion of most amenities and services in the neighborhood.

3.1.2.4 -Lack of Calmness:

One of the aspects that residents were usually concerned about was the lack of quiet areas in the new housing developments.

Noise level was increasingly obtrusive because of the inadequate design of the houses themselves and the wide surrounding streets accessed by cars and heavy traffic.

The above mentioned contemporary approach of completely extroverted dwellings with an outside orientation, along with the use of modern building materials without adequate insulation, leads to the penetration of noise.

3.1.2.5 -Aspects Related to the Mosque:

The mosque and religion are fundamental issues in the understanding of Islamic architecture. In this part of the study, the discussion will be limited to analysis, understanding and evaluation of the mosque and its role in the society. Furthermore, the residents' assessment of their new housing areas with relation to the mosque will be discussed.

Ever since the emergence of Islam, the mosque has been the collective centre of the Muslim community. The mosque has been the starting point of planning (Fig.12). It was the meeting and gathering place for the believers, where they learn teach, pray and discuss their affairs. A good example was the Prophet Mohammed mosque in Medina, western Saudi Arabia. It was the meeting place for the Prophet and his companions. It was always the place where people congregated to consult each other on their life affairs.

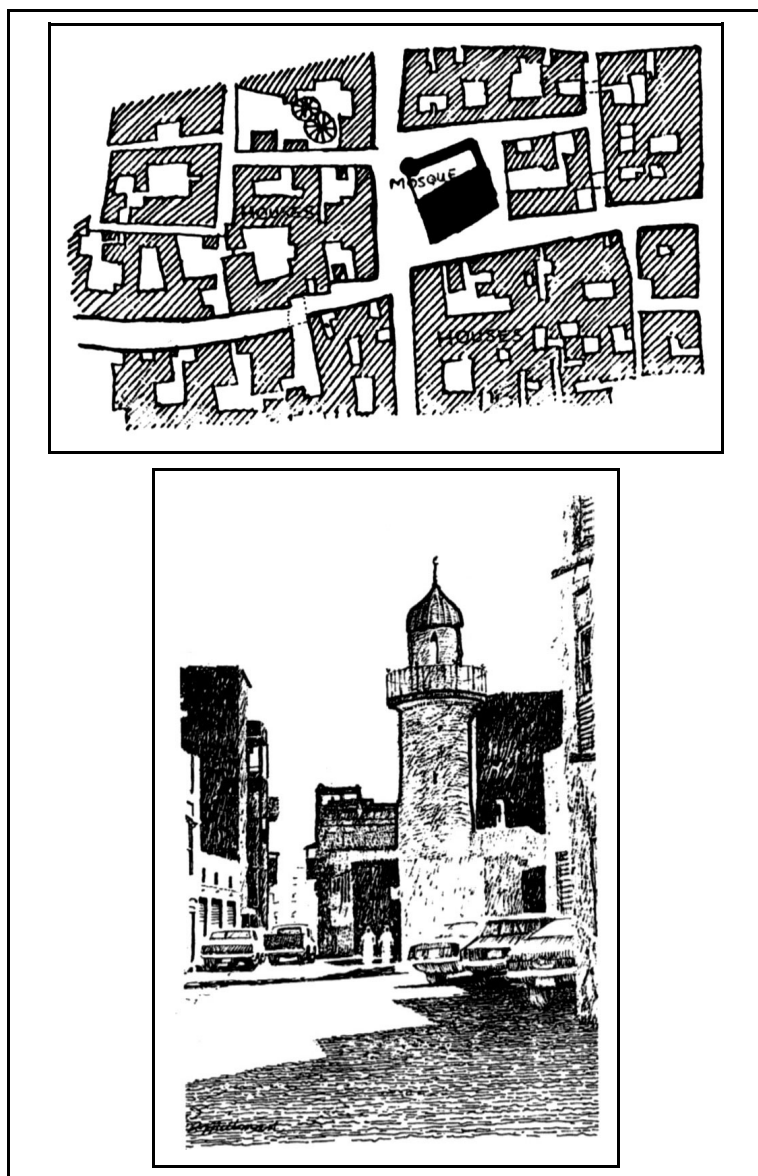


Fig. 12 - The mosque was the main characteristic feature of the traditional neighbourhood. It had been the axis of all residents' activities since prayer constitutes the second pillar of Islam

Abu Alkhalil (1979:52) has indicated that Islamic urbanization had always been affected by the mosque. It had been the basis of social organization as well as the centre of physical planning and organization.

At present, the mosque's role has been diminished to focus only on prayer performance; it is no longer a social and gathering place and a collective centre for Muslims. The most serious problem as viewed by the researcher is the gradual disappearance of the mosque as the major planning element in the contemporary residential areas.

During the site visits, significant differences were found in relation to the distribution of mosques. For example, too many mosques were built in some areas, while there were not enough or none at all in other areas. This was attributed to the fact that the distribution of mosques was unplanned. Some of the residents felt that their social life and religion had been affected. The inconvenient location of mosques was indicated by more than half of the respondents (59 percent). Some occupants had to use their cars five times a day in order to attend prayers in far-located mosques. Typical of the comments made by some respondents during the interviews were:

The local mosque is far from my home. I need to use the car most of the time for transportation. Sometimes it is difficult for me to go to the mosque. I prefer to pray at home.

The provision of safe pedestrian walkways to the mosque is not considered in this area, it is difficult to approach the mosque, there is also inadequate shade and unsafe access.

Our life is connected to the existence of the mosques. It is the

major source of our religious instructions. We perform prayer five times a day in the mosque⁽⁵⁾.

The present mosques are constructed in a way so as to divide the residents into small groups, not to unite them. This is against the teachings of Islam.

The location of mosques close to busy streets creates too much disturbance for the people who are trying to perform prayer inside.

From the previous discussion and the comments mentioned it is reasonable to conclude that Islam and the religious centers should be considered as principal elements in the contemporary residential formation. Architects and planners should consider that the basis of any Islamic urbanization network should be the optimum distance between the resident's dwellings and the mosque and vice-versa. The mosque should be made an important consideration in terms of the number of people it serves in the neighborhood and the availability of easy access from dwellings to the mosques. Planning codes need to be enforced and re-evaluated.

3.1.2.6 -Car Parking Problems:

Among the several problems related to the immediate neighborhood surrounding the respondents' dwellings were the availability of parking areas for the residents. Undefined parking spaces were found to be more prevalent in contemporary neighborhoods. During the site visits it was observed that residents parked their cars anywhere close to their dwelling units, regardless of the need to keep streets or sidewalks clear of traffic blocks. It was also observed that some residents parked

(5) Group prayer in a mosque is far better than single prayer elsewhere. The sunna of the Prophet (his sayings and deeds) has indicated the pre-eminence* of the mosque in several hadith, so it is encouraged by the teachings of Islam to pray in a group in a mosque.

their cars outside their dwellings; while some of the occupants park their cars inside the garage in front of the dwelling units. General comments were made by the respondents during the interviews. Among these:

I changed the purpose of the enclosed garage to a living space for my driver. I want him to be away from the family area. Parked vehicles and traffic movement are mixed and creating a lot of problems.

There are not enough parking areas. Sometimes visitors park their cars far away because surrounding neighbors usually park their cars in front of my house.

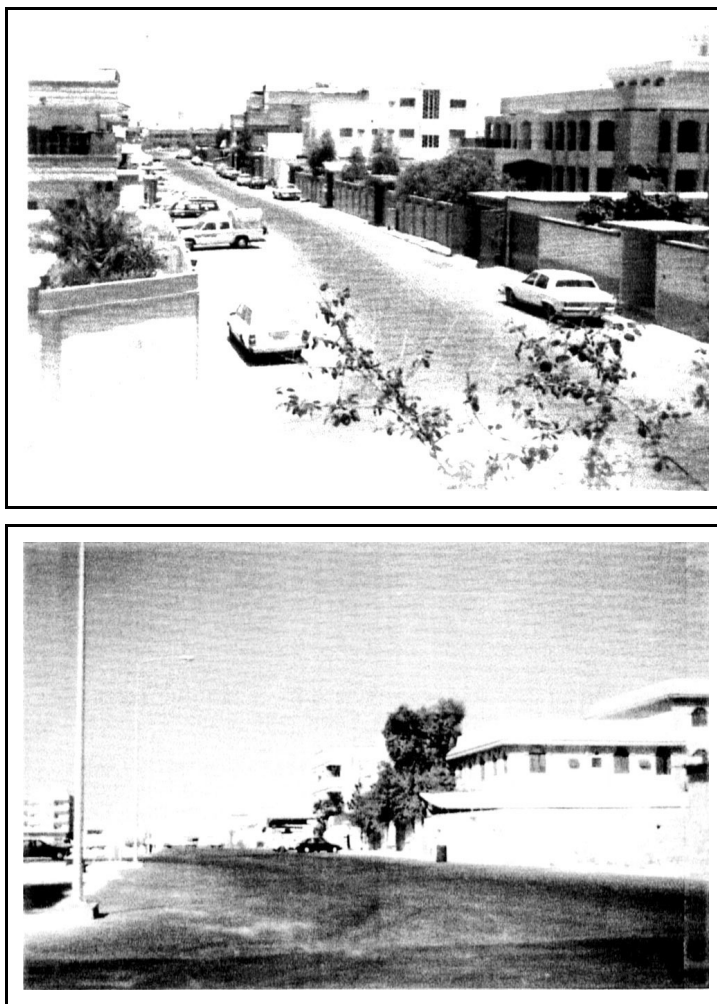
We own more than five cars, while the dwelling unit provides only one closed garage. Therefore, everyone tries to park his car anywhere close to the main entrance.

It is quite evident that all the areas studied lacked enough defined and shaded public car parks (Fig.13). This was also true in most of the new housing projects in Saudi Arabia, which suggests the need for immediate attention by the local authorities. Efficient public transportation from and to these new urban areas should be initiated.

When respondents were asked to compare their present dwellings to previous ones, nearly 79 percent of the respondents mentioned that their present dwellings were better than the ones in which they had previously resided. This may explain a great deal of initial housing satisfaction about the present dwelling despite some of the complaints mentioned previously.

When the respondents were asked how present dwellings were better, the majority (88 percent) mentioned the availability of new services and utilities in contemporary dwellings among the main reasons. This was expected because most of their previous dwellings lacked proper services and utilities such as water, sewage and sanitary facilities. Most important, the previous dwellings tended to be small for the current needs of the Saudi

family. More than half of the respondents (69 percent) found their dwellings better than the previous ones because of aspects related to the size of the dwelling (i.e., more rooms, larger space, etc.).



**Fig. 13 - The new street patterns show repetition of one design.
Lack of defined and organized car parking is devious
in the new residential areas..**

Aspects related to the construction of the dwellings were mentioned by nearly 54 percent of the respondents, who found their dwellings better constructed and more durable than the previous ones, especially those who used to live in traditional dwellings. It must be indicated that previous traditional types of housing offered a comfortable environment for the Saudi family because they provided privacy, natural ventilation and illumination, and good thermal performance. However, as mentioned earlier, most of them lacked plumbing, and sewage. They tended to be small for the current Saudi needs.

In spite of declared deficiencies and complaints about the respondents' new dwellings and the low rating of some of the dwelling attributes, Our findings indicated a higher level of satisfaction by the overwhelming majority of the respondents. More than 80 percent of the respondents were satisfied with their new housing "as a place to live". This high level of general satisfaction comes despite several deficiencies and problems that were observed or reported about their residential environment.

The occupancy status of previous residence was found to be significantly related to how the respondent perceived the present dwelling in comparison to the previous one. As might be expected, the ownership feature was mentioned by a larger proportion of those who used to rent or live with relatives (45 percent) than by those who owned their previous residences (statistically significant at the, 05 level and beyond).

Some factors were found to be associated with the respondents' satisfaction or dissatisfaction with the design of their dwellings. For example, dissatisfaction among those who experienced privacy problems (vision related problems) was found to be higher than for those who did not. Furthermore, the mean rating scores for those who were experiencing acoustical problems (hearing neighbors) were found to be much lower than those who did not (the mean scores 2.98 vs.

3.15). These findings may suggest that perceived problems about the lack of enough privacy in the residential environment will result in a high level of dissatisfaction with design.

Personal characteristics of the respondents such as age, income and household size showed some (although not large) relation to general satisfaction. For example, older respondents (51 years or over) tended to report the highest level of satisfaction, while middle age respondents (36-50 years) reported the lowest. These differences in rating could be attributed to the household size differences where a great number of the middle age respondents seem to have a considerably larger family size (6 persons or more), requiring more space and dwelling facilities than the present dwelling could meet.

The size of the house showed a highly significant priority for a wide range of respondents. A very strong association was found between the home size priority and the family size of the respondent (positive correlation $P < .0001$).

Significant differences in the ratings were also found between the proportions of respondent groups according to their educational level (statistically significant at the 00 level). According to the empirical data, a higher level of education (college degree) was higher than among those who held a lower level of education (high school or less) [3.41 versus 3.01].

Significant differences were also found between length of house occupancy and the level of satisfaction. Our study observations indicated that those who resided in their present dwellings longer (5 years or more) tended to be less satisfied with design than those who resided for a short period (less than 5 years) [The mean scores 2.82 versus 3.21]. Reasons which may be associated with dissatisfaction among those who resided longer could be related to changes related to the individual and his family. For example, changes might have

occurred in the life cycle, such as an increase in the family size that required the need for more space or the growing number of older persons who required more space.

Also, as mentioned earlier, the findings indicated that there was a strong association between perceived problems about the residential environment and length of house occupancy. Longer duration has a significant negative effect on the respondents' assessments of their dwellings. The usual interpretation of this result is that longer occupation raised aspiration and needs that are not easily fulfilled at the dwelling and, hence, produces dissatisfaction with the dwelling.

Lastly, it is worth indicating that previous studies have suggested the tendency of human subjects to use positive ratings more frequently than negative ones, regardless of the phenomenon being rated (see Campbell, et al., 1976 and Alsaati 1987). A similar result was also found among our respondents. As aforementioned, our findings indicated, in spite of complaints about their dwellings and the low ratings of some of the dwelling attributes, a higher level of satisfaction by the overwhelming majority of the respondents.

4.Summary Of Findings:

It has been the intention of this study to analyse and evaluate the newly built dwellings and residential areas in selected cities in the Eastern region of Saudi Arabia and to determine the extent to which these houses have met the needs of their users. This exercise was undertaken in order to establish a more reliable base of information for decision making of those in charge of housing policy; to enable them to adopt appropriate measures to achieve a more responsive residential environment.

It is to the credit of the government of Saudi Arabia that a large number of families have been accommodated. This satisfies the stated aims of the National Development Plans, "to provide appropriate safe

and sanitary dwellings". However, the ensuing modern houses are not a product of Saudi Arabian heritage, but are the result of an imposed style and applied legislation. Foreign influence is evident in the application of planning and design principles. It has brought modern sanitary conveniences, and new standards of physical comfort, but it has also encouraged lifestyles reflecting western norms. The immediate consequence of this approach has resulted in an identity crisis in urban development and housing. Unplanned services for the new residential areas also represent a major problem and obvious shortcoming.

A dwelling is far more, and requires far more, than the determination of specific spaces controlled by specific measured elements. A dwelling unit must fulfil a series of integrated human and physical needs and it should provide a complete habitable environment. Yousef and Eid (2006) stated: The shelter must be compatible with various human aspects that provide safety and satisfaction.

During the field surveys of housing conditions it was found that most of the respondents considered the absence of privacy as a major problem. The need for privacy encouraged by Islamic values requires the segregation of males and females by creating two different domains within the one dwelling.

Our findings indicated that these requirements were inadequately met. It seems that part of the problem lay in inappropriate building regulations. It is apparent that people will continue to maintain their desired level of privacy as dictated by their needs by any means possible unless building regulations are appropriately revised to meet these needs.

The field survey also revealed that lack of protection against climatic forces was another major problem relating to modern housing. Affordable electro-mechanical means of climatic control had led to less attention being paid to the potential of the building fabric as a climate modifier. Comfortable living conditions could be provided without much energy

consumption. However, this was only possible if climate was taken into account from the outset, during the planning and design process.

With regard to the neighbourhood, most of the occupants had commented that their neighbourhoods lacked adequate facilities and services such as sidewalks, street pavements and lighting. The new residential areas offered no opportunity for social activities and group gathering. Play areas for children were not considered at all. Children were observed playing in the streets most of the time.

Based on these results the lessons are obvious. Provision of community facilities and services should be considered vital to standards of health and safety and comfortable living environments. Recreational facilities and children's playgrounds are essential and must not be ignored. They should be provided in safe and centrally located areas where they can be sighted from the dwellings and protected from vehicle traffic.

New developments in the West are turning for reference to the planning and design parameters so competently displayed in traditional architecture. The writer is of the opinion that traditional housing in Saudi Arabia cannot be ignored, but should be used as a source of inspiration and a channel for creativity and development, by offering clues as to what planning and design approaches are most appropriate for this particular culture.

From the discussion presented in this research it is very clear that present day housing and urbanism in Saudi Arabia reveals many sources of conflict. In a remarkably short period of time the highest numbers of residential units ever known in Saudi Arabia were constructed. However, quantity of housing must not take precedence over the quality of life for both individuals and society.

5 -Recommendations:

-Planning Regulations:

The two key issues which have emerged from this study and which have planning regulation implications are related to privacy and climate. Answers to both are clearly associated with design, layout, materials and construction, and the relationship of dwellings to the neighbourhood.

There is a need for new approaches to planning and design of modern housing, which also requires experimentation, research and revision of bylaws. The following are the major suggestions with regard to privacy and climatic comfort:

- Privacy:

Aspects related to privacy should be seen as a concrete issue. The concern for privacy as a social-religious need should be taken into consideration by designers and municipal institutions when developing regulations and building codes. Some of the most important recommendations in this regard are:

- The design of dwellings should be carried out to prevent the possibility of overlooking by:
 - Shading and visually protecting the living spaces, such as yards and service areas by orientating them to interior courtyards.
 - Windows should not be directed to overlook any of the neighbours' private spaces.
 - Some shading devices such as Mashrabiya (wooden screens) on windows should be encouraged.
- Roof parapet should be high enough to provide privacy for the family, and also to respect the privacy of neighbours. The height of the wall should not be less than 1.80 m.
- Total separation between the family section and the male guests sections should be a significant consideration in the design of the

dwelling unit, and should be achieved by creating two distinct domains through double circulation.

- Two separate entrances for each dwelling unit should be encouraged. One entrance for male guests which leads to the guests' section. The other entrance for family members and females which leads to the family quarters.
- External entrances should be designed in a way to obstruct all the view of the inside and gives no direct vision to the internal spaces if the doorway is open. The protection of householders from sudden exposure (i.e. the sudden entrance of a stranger in the house without warning) should be considered.
- The surrounding leftover spaces (set backs) are seen to be negative spaces and should be avoided in the design of new dwellings. The attached dwellings centred around and open towards an interior courtyard would provide complete visual protection for the family from neighbours. No openings should be allowed on the side of the house that would result in invasion of privacy by those in the surrounding dwellings.
- Balconies are common in new houses, but they are rarely used, as our study proved. In western society, people use balconies as an outdoor living area to watch street passers-by. It offers the residents a chance to be part of the outside world. But in a Saudi society, sitting on balconies is considered an abuse of privacy. It is suggested that balconies resulting in invasion of others' privacy should be avoided.
- Building heights within residential areas should be restricted and regulations regarding openings must be developed to eliminate intrusion into the private life of the residents, such as overlooking a roof from its neighbouring building.

- Climatic Comfort:

The following are some of the major suggestions with regard to the climatic comfort factors:

- Special consideration should be given to the location, orientation and size of dwellings' openings.
- The utilization of some passive solar techniques is recommended. Maximizing the use of passive heating and cooling systems as well as natural ventilation must be considered.
- The amount of undesirable sunlight during the hot summer could be minimized by:
 - protecting the external walls by plants and landscaping or appropriate overhangs.
 - utilizing appropriate insulation materials for roofs and walls.
 - suitable construction techniques such as cavity walls.
- Achievements of the greatest possible thermal comfort with a minimum use of mechanical heating and cooling systems should be considered. The option of natural ventilation should be mandatory.
- The complete reliance on air conditioners in new dwellings can be significantly reduced by improving the thermal insulation of the dwelling's envelope in order to achieve acceptable climatic comfort for the residents with the least possible cost. Other useful alternatives for climatic comfort solutions are indicated by Gonzalo(2005)and, Mathew (2007).

Finally, the findings of this study strongly suggest the revision of existing building codes and regulations. The reform of the building regulations ought to be studied carefully if housing activities in Saudi Arabia are to succeed. The foregoing recommendations presented in this work must be regarded as suggestive rather than conclusive. It is obvious that a number of research and field studies need to be carried out before tangible solutions can be found. Measures outlined in this study may well help achieve some of these stated objectives.

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