

# Observations on Dental-Oral Health Conditions of Għarb Schoolchildren

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The village of Għarb affords a colourful glimpse into the past. Għarb is Gozo's westernmost parish and the origins of the village date back to ancient times. Għarb was inhabited since early times. This corner of Gozo, fairly distant from all the better landing places was perhaps a relatively safer area in which to live during the sixteenth and seventeenth centuries.

The village was granted parish status just over three hundred years ago, when by a decree dated August 29, 1679, it ceased to form part of the parish of Rabat. A petition with this request in the name of about 500 villagers who lived in eighty houses and farms at Għarb and its environs had been sent to the Bishop of Gozo on August 11, 1679. A general glance at old records shows that death was a common occurrence and infant mortality was very high. One wonders what their general and dental-oral health was like at that time.

Let us bridge the transition from past history to recent times. Għarb is a blend of the past and the present; modern beautiful houses lie fairly close to old buildings and farms. To wander about the streets and pathways of this village is to experience a translation in time more realistic than any suggested by stage or screen.

While carrying out my duties in Gozo between 1956 and 1964 (one day a week, mainly at Victoria Hospital) I had then concluded after analysis of data collected that the dmf rates among the young and adults alike were very much lower and better than those in Malta. Examination of behavioural patterns, nutrition and social factors threw light on the very good dental-oral health prevailing in general. In 1962/63 I examined the mouths of schoolchildren from Għarb, Għasri and San Lawrenz who attended Government primary schools and was impressed with their very good dental-oral health conditions.

I had then written to Professor C. Coleiro, the C.G.M.O., who had asked me for a short report ... "I have examined 192 schoolchildren from Għarb, Għasri and San Lawrenz, who attend Govt. primary schools as well as several who are in the care of nuns. In these villages, the social conditions linked with a healthy rural way of life, a satisfactory varied diet which contains a high proportion of wholesome agricultural foods grown locally, an adequate protein-carbohydrate element plus trace minerals, including phosphorus, etc. and a very good fluoride level in water averaging between 0.35 to 0.45 parts per million are no doubt positive contributing factors.... The naturally occurring fluoride in Gozo is substantially higher than in most localities in Malta. In Gozo this ranges from 0.2 to 1.1 parts per million. In Għarb and San Lawrenz, the water supply (1962/63) is obtained partly from the Għar Ilma spring and from local wells.

Besides rain water, some of the large wells receive water from underground strata, which I am told are saturated with it."

It is relevant to mention a fact concerning water and the old parish church of Għarb which is no longer used. According to parish records, between 1650 and 1700 water sometimes flowed near its foundations from a small spring under the main altar. Another site known as Ta' Nawrata, nearly one kilometer from the old city was chosen for the erection of a new church. This confirms what is said about some local wells.

Epidemiological studies carried out in various countries demonstrate that the ingestion of a trace of fluorine during tooth formation affects very positively tooth structure and lowers appreciably the incidence of dental caries. In my opinion the fluoride element in the water in Gozo, which is within the safe limit of one part per million (less in several places) significantly reduces, besides other factors, caries prevalence.

"The DMF rate of the schoolchildren of Għarb and San Lawrenz at ages 8 to 12 is 0.30. Ninety per cent of the schoolchildren of age groups 5 to 12 I examined are caries free. Gingivitis and in all cases of a very mild form affects only a very small number and eighty five per cent are free of this condition. Notwithstanding that roughly seventy-five per cent (probably more) do not practise oral hygiene and toothbrushing regularly, the caries rate and periodontal disease among these children is definitely lower than the rate among Maltese schoolchildren of the same agegroup."

"By comparison (1961-63) approximately 36% (percentages given to the nearest figure) of schoolchildren of the same age group in Cospicua, Senglea, Żabbar, Żejtun and Marsa which Dr. Albert Galea, DDS and myself have examined suffer from dental caries in varying degrees. Gingivitis, although mainly of the mild form affects 18% while 28% have dental plaque and/or calculus. On the other hand the incidence of caries and gingivitis among the schoolchildren of Mgarr, Naxxar and Mellieħa is only a little more than half when compared with schoolchildren from Cospicua, Senglea, Żabbar, Żejtun and Marsa. The DMF rate in schoolchildren at ages 8 to 12 is 1.90 at Cospicua, Senglea, Żabbar, Żejtun and Marsa. Whereas in Malta, we have noticed a clearly noticeable increase in dental caries among 8 to 12 year olds, this occurs to only a negligible extent among schoolchildren from Għarb and San Lawrenz."

An oral examination of schoolchildren provides significant data for human and epidemiological studies. The survey covering 192 schoolchildren from Għarb, Għasri and San Lawrenz which I had carried out in 1963 was an interesting experience. In 1985 and 1986, I again examined the mouths of those attending

Għarb Primary School. Unfortunately the school of Għasri had been closed down in July 1972 and that at San Lawrenz in July 1978, because of the small number of children who attended them.

The purpose of my study was mainly to see their dental-oral health condition and to compare findings with those of 23 years earlier. In 1963, I was very favourably impressed with the amazingly low incidence of caries: the DMF rate at ages 8 to 12, being 0.30. There was also a very low incidence of periodontal disease (gingivitis, etc.) among the great majority of schoolchildren. Again after 23 years, although slightly less good, I found a very encouraging picture which tends to keep very low figures at the age groups five to twelve. DMF rate is approximately 0.40. The vast majority enjoy very good dental-oral health, are energetic and healthy. I also noted that very few wear glasses. Eighty-five per cent of children in mid-1986 were caries free.

It may be argued that the very good oral health condition in Għarb, San Lawrenz and Għasri does not necessarily reflect the exact condition of Gozitan children. The number of children which I examined and which come from a predominantly rural healthy environment and with a very satisfactory fluorine element in the water do not justify in my drawing clearcut conclusions, but I am of the opinion that in Gozo dental-oral health among children and even adults in general, is much better than in Malta, although slightly less so than it was 23 years ago. I think that, in general, the incidence of caries has increased slightly in Gozo.

The population of Għarb in 1985/86 was around 948 of which about 21% were aged 60 or over. The number of households was 209. 123 schoolchildren attend Għarb School: 58 boys and 65 girls. Their ages (1986) are as follows: - 4 year olds - 2; 5 year olds - 24; 6 year olds -14; 7 year olds - 13; 8 year olds - 16; 9 year olds - 17; 10 year olds - 17; 11 year olds - 17; 12 year olds - 2; 13 year old - 1. Eightyfive of these live in Għarb and the other thirty-eight come from San Lawrenz and Għasri. However, lifestyles, socio-economic conditions, occupations and nutrition are more or less similar. Besides these, I have also seen sixteen other children who attend a private school.

With the exception of two fathers, one English and one Libyan, all the parents of schoolchildren are Gozitan. The majority of families have links with agricultural activities. Although about half of the fathers are employed, most families grow vegetables and have fruit trees, chickens, rabbits, etc. Many also rear some goats. The vast majority are nearly or fully selfsupporting as they grow their own produce, either in fields or in large or small gardens. There are thousands of fruit trees, including citrus in these three villages or environs. Out of 123 schoolchildren, only 13 do not drink the milk normally supplied to them free at school.

The fluoride level of the water supply checked in December 85 and June 86 fluctuated from 0.20 parts per million to 0.32 parts per million. I am informed that for long periods during the past few years, water was obtained mainly from a nearby borehole and from

Għar Ilma. Several parents I talked to also drink well water.

The 123 children who attend Għarb Primary School (ages 4 to 12) are not the only children from Għarb, San Lawrenz and Għasri, because approximately the same number of the same age group attend private schools. It is possible that in general those attending non paying Government schools are financially less well off than those attending private ones, which means that they have less pocket money to spend on sweets and refined confectionery. At Għarb there is no shop in the immediate vicinity of the school and with the help of teachers, I asked each boy and girl how much they spend on sweets and related sugary foods, 20% spend about 10 to 15 cents weekly, 50% buy sweets/biscuits about once a fortnight spending about 15 to 22 cents, another 20% buy them rarely, while 10% do buy fairly often, spending about 50 cents a week. (Percentages given to the nearest figures).

Research is going on in several countries about the *why* of fluoride protection, but the last word is probably yet to come. Fluorine, when absorbed by the body is stored in the bone structure and in the teeth while the remainder is eliminated. In the teeth it is deposited, largely in the enamel, probably in three different stages: (a) during the time the enamel is forming, before the tooth erupts into the mouth (b) after the mineralization of the enamel is completed, but before the tooth has erupted and (c) by surface deposits, although to a lesser extent, during life.

As the fluoride ion comes in contact with the tooth enamel, it combines with certain substances in the enamel to form new compounds that are less open to attack by acids and caries-involved bacteria. Some of the carbonate in the outer enamel which is highly soluble in acids seems to be replaced by an element which contains fluorides, rendering enamel less susceptible to acid attack. We also have evidence to show that the presence of fluoride ions, especially in young individuals, aids in the re-precipitation of calcium salts in the partially decalcified enamel. Remineralization takes place in varying degrees in different people encouraging the enamel surface to gradually repair itself or form resistance.

Fluorides have another beneficial effect. The fluoride ions when present in the saliva or in plaque have an inhibiting action on the enzymatic activity that causes carbohydrates (besides other factors) to break down into the acids which attack tooth enamel.

To sum up: In this study I have been rather concise and have limited myself to data which is of direct relevance.

Although this study was not on a large scale, my findings in 1963 and 1985/86 indicate that prenatal fluoride, taken through natural water is very beneficial in controlling the extent of dental caries in subsequent offspring. The very high percentage of caries free and gingivitis free children is indeed

impressive. I believe that fluoride ingestion in suitable regular amounts, especially from natural water is of the utmost benefit. Fluoride is a nutritional need during the developmental period of teeth. I also believe although this is never mentioned, that exposure to the sun for reasonable periods during childhood and later, plays a beneficial part in the development and resistance of teeth.

In general the eruption of teeth in the children I have referred to is stable and in the vast majority follows a nearly textbook pattern. Some show signs of mild fluorosis. Although a few showed signs of minor dental irregularities, the jaw and dental relationships in general is good. I saw only one case of a pronounced Class II, Div. 1 occlusion, whereas in Malta we tend to see a fair number of them. I saw only a few cases of

minor dysfunction. Genetic factors affect the pattern and resistance of teeth considerably.

Teachers do their part to make their pupils conscious of the necessity of tooth brushing and oral hygiene. However a large proportion do not do this regularly every day. Notwithstanding this, the incidence of caries is very limited, which shows that other factors are keeping caries in check. There may be an inherently resistant factor but also the very small consumption of sweets, refined confectionery and foods has a marked salutary effect.

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