

# DRUG THERAPY IN SELECTIVELY INSTITUTIONALISED ELDERLY PERSONS IN MALTA

J. J. Mamo

*International Institute on Aging  
(United Nations - Malta)*

## SUMMARY

A cross-sectional survey was undertaken among a particular section of the Maltese Elderly Population - that in Church and State homes (excluding large homes admitting sick elderly) - who are often selectively admitted on the basis of independent living, in terms of activities of daily living. A questionnaire was administered to carers of elderly persons in these homes to quantify the consumption of therapeutic drugs in this population, as well as to study the influence of a number of factors on the prevalence of drug consumption.

High prevalences of partial/total dependence as well as of drug consumption were found, indicating that either (1) the selection process was not always maintained or (2) institutionalisation resulted in an increase in drug consumption in attempts at "enhanced care" or (3) residents often eventually developed degenerative diseases while living to an 'old' old age. As the data is cross-sectional this speculation will remain until the survey is repeated, possibly among (sicker) residents of the large government residential homes and/or those elderly living in private homes.

Interesting associations between degree of dependence and major reason for drug therapy may suggest prognostic indicators useful in the selective process of admission.

Key words: *Elderly, Drug, Therapy, Institutions.*

## INTRODUCTION

The elderly members of Maltese society tend to run a greater risk of acquiring one of a number of so called "degenerative disorders" with increasing age<sup>1</sup>. They are also at a stage of life when physiological and anatomical changes are manifest, which in turn further predispose to disease. They can therefore be considered a special risk group. However, aging is an ongoing process and, like disease processes, does not really "happen" at any one point.

As a means of controlling these degenerative disorders it is commonplace that drug therapy is prescribed, although this is avoided whenever possible and limited to the minimum when essential. This is particularly necessary because of the altered physiological state of the elderly person, but also because of the evident increased risk of acquiring more than one degenerative disorder, necessitating more than one therapeutic drug and hence an increase in potential adverse reactions.

In Malta, the elderly population can be considered as residing in one of three different care settings:

- at home: This includes all those with a family, all those living alone, and it also encompasses any who desire to enter a residence but are not accepted owing to a partial or total loss of independence in the activities of daily living;
- in a geriatric residence: The elderly are often taken on because of a particular need for nursing care or rehabilitation. They constitute a "sicker" group;
- in a government or church run home: These must be able to look after themselves with respect to daily living activities - at least on selection, and therefore should constitute a "healthier" group. It is understood that if residents are not discharged on loss of independence, then the homes will constitute a population which tends to approximate that living in their homes.

This survey aims to assess this third group constituting one sector of the elderly population, in terms of needs for drug therapy, frequency and

amount of therapy taken, and to identify the major medical reasons for drug therapy - which does not of necessity follow the prevalence of disease states in the same population. Specific objectives have been tabulated (Figure 1).

Fig. 1. Specific objectives of a survey on drug therapy among elderly persons (Malta, 1990)

---

**To study the elderly population in residences throughout Malta and Gozo with a view to identifying:**

- A. The proportion of elderly taking any form of regular drug therapy
  - B. The broad disease categories requiring therapy (in those taking treatment)
  - C. The number of different drugs taken
  - D. The estimated compliance with prescribed regimens
- 

The findings of this study may obviously not be extended to the other two groups of residential setting - there being considerable differences. Nineteen homes were included in this way into the study. These comprised 17 Church run homes and 2 Government homes from all over Malta and Gozo. These homes varied considerably in size, age and sex of residents, as well as other conditions. The whole group is considered to constitute a healthier institutionalised elderly population (Figure 2). No sampling was considered necessary, as the total number of residents could be accommodated. Exclusion criteria were those homes not in existence at least 6 months previously and individuals not resident at the homes at least 6 months previously, to ensure some form of "institutionalisation" effect. One young individual who also happened to reside at a home was excluded.

Fig. 2. Population and exclusion criteria in a study on drug therapy among elderly institutionalised persons (Malta, 1990)

---

**Target population = study population = sample**

Exclusion Criteria:

- A. Homes < 6 months in existence
  - B. Individuals resident in a home for < 6 months
  - C. Young (< 50 years) individuals resident in these homes ( $n = 1$ )
- 

## METHOD

A prevalence study was carried out by questionnaire administered to the carers responsible for medication in these homes, for each eligible elderly person. The elderly themselves were considered to introduce considerable difficulties owing to widespread illiteracy and otherwise poor education. There were also other possible reasons for their being unable to answer the questions.

The information was gathered from records held on residents within the acceptable interpretation by carers. Carers were trained briefly in filling questionnaires and were supported by written guidelines. They were also offered any advice by phone as necessary. One week was allowed for the filling in of forms and then these were collected with the exception of one or two which were posted.

A brief pilot study took place including one Church and one State home in early December 1990. The full actual study was carried out during the last week of 1990.

## STATISTICAL METHOD

Data was captured, stored and analysed on IBM compatible software - EPINFO - available as public domain through WHO (designed initially as a standard tool for its World Programme on AIDS). Tests for

differences between two proportions, Chi Square tests, Odds Ratios and Linear Regression models were used as appropriate.

## RESULTS

All 19 Institutes forwarded their questionnaires - some after added coaching. Only clear answers were accepted while some information was inevitably missing in individual cases.

582 individuals entered the study and satisfied the inclusion criteria (Table 1). The mean overall age of the elderly residents was 80.9 years i.e. many were 'old' old. Surprisingly the mean for males and females was not very different (79.4 and 81.4 years respectively). Even more surprising was that the age distribution was not very skewed with median and mean in close proximity.

Table 1  
Age distribution and Sex distribution of elderly persons in institutions as compared to elderly population (Malta, 1990)

---

Number of Homes - 19  
Number of Elderly Persons included - 582

	Mean age of residents (in years)	Median age of residents (in years)
Males	79	81
Females	81	82
All	80	82

Sex distribution:

	Elderly Homes	Total Elderly Population
Males	27%	44%
Females	73%	56%

---

As may be expected, females outnumbered males - 72.9% as opposed to 27.1% respectively. This was incongruous, however, with the distribution of the elderly population of the Islands (56% females and 47% males). The mean number of years spent in these institutions (Table 2) was of 5 years - with a slightly longer mean for females (5.1 years) than for males (4.3 years). The distribution of time (in years) since these elderly were institutionalised was considerably skewed, such that the median - males 3 years, females 4 years is more representative of the population.

Table 2  
Distribution of duration of residential stay in Institutions, by sex and distribution by dependence in activities of daily living (Malta, 1990)

	Mean number of years in home	Median number of years in home
Males	4.3	3
Females	5.1	4
All	4.9	4

Dependence on others for activities of daily living:

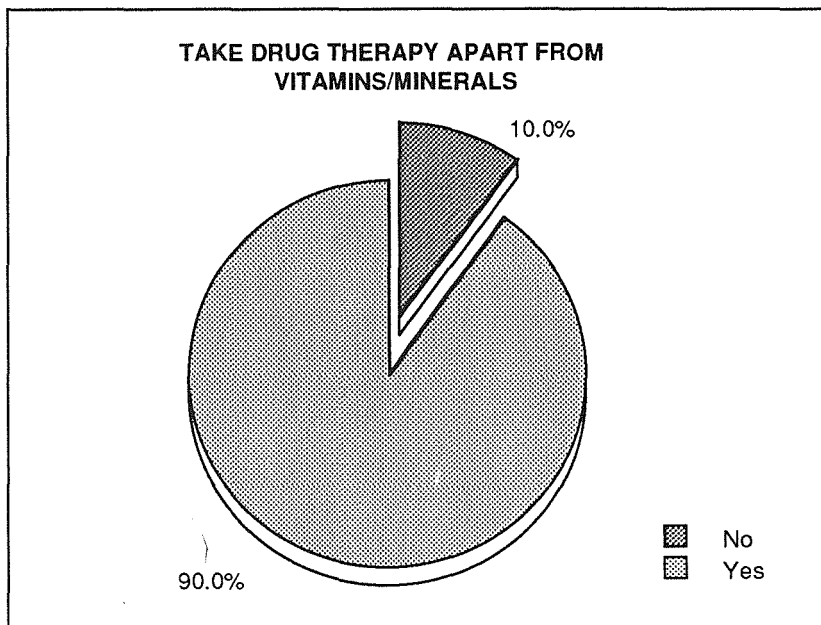
38.7%	absolutely independent
32.8%	partially dependent
28.4%	dependent

As may have been suspected from previous knowledge of these homes, where it is socially unacceptable to discharge residents who lose independence in activities of daily living (walking, dressing, using the toilet, bathing etc.), as many as 61% were reported to be partially (33%) or totally (28%) dependent.

Another staggering figure was the actual prevalence of elderly persons taking some form of drug therapy or other (Figure 3). Once vitamins and/or minerals were excluded this reached 90%. In view of the high

proportion who have lost some degree of independence in daily living, this figure can be understood to some degree. It does pose important questions as to what this figure corresponds to in those failing the selective process of these homes or those admitted to a geriatric residence on medical grounds.

Fig. 3. Proportion of elderly persons taking drug therapy (excluding vitamins) in Maltese Institutions (Malta, 1990)



Another question which arises regards the possible influence of institutionalisation in the form of increased medical attention, and therefore, of medical therapy. There appeared no difference in drug therapy prevalence among the two subgroups who either did or did not receive regular (assumedly preventive) general practitioner visits (63% vs 37% of the residents respectively).

It was learned through discussions with carers that most elderly persons insisted on taking all prescribed therapy, however it was still surprising

that not one resident of the 582 in the study was described as having prescribed treatment which was never taken!

The major reasons for which drug therapy was given are tabulated (Table 3). Evidently "heart disease" is the major reason for therapy - although it is understood that this category includes a variety of conditions (heart failure, ischaemic heart disease) and possibly there was some misclassification of anti-hypertensive treatment into this group.

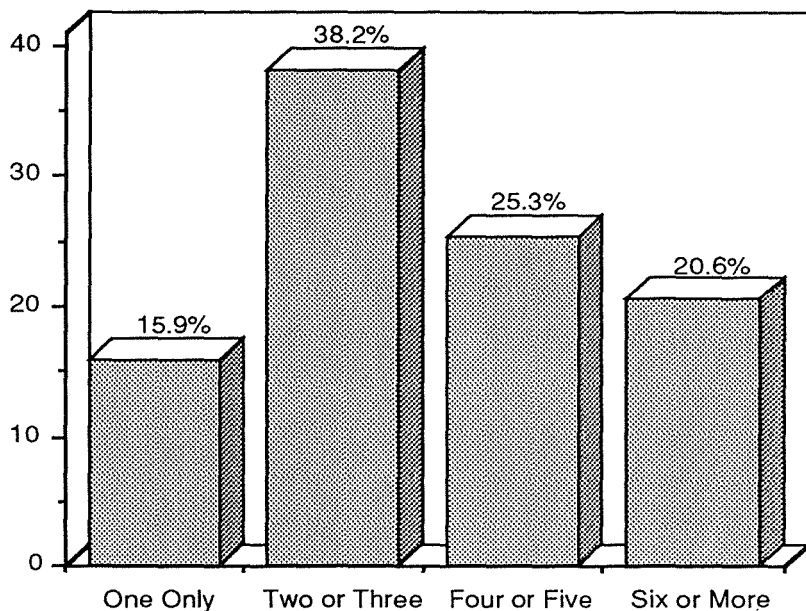
Table 3  
Reported main disease categories for drug therapy use among institutionalised elderly persons (Malta, 1990)

Main categories for drug therapy among users ( <i>n</i> = 532)	
Category	Prevalence of use
Heart disease	53.7%
Other	49.0%
of which hypertension	16.5%
and psychotropics	9.2%
Arthritis	48.3%
Diabetes mellitus	22.8%
Vitamins/minerals	18.6%
Asthma	7.9%
Not known	1.3%

Indeed hypertension, which is known to be a common condition among Maltese persons of this age,<sup>2,3</sup> is only specifically listed among 16.5% of drug therapy users. The "arthritis" category was also a very popular reason for regular drug therapy. Carers were asked to enumerate the different drugs consumed by elderly residents. On those taking therapy, as many as 46% were taking four or more different drugs (Figure 4).



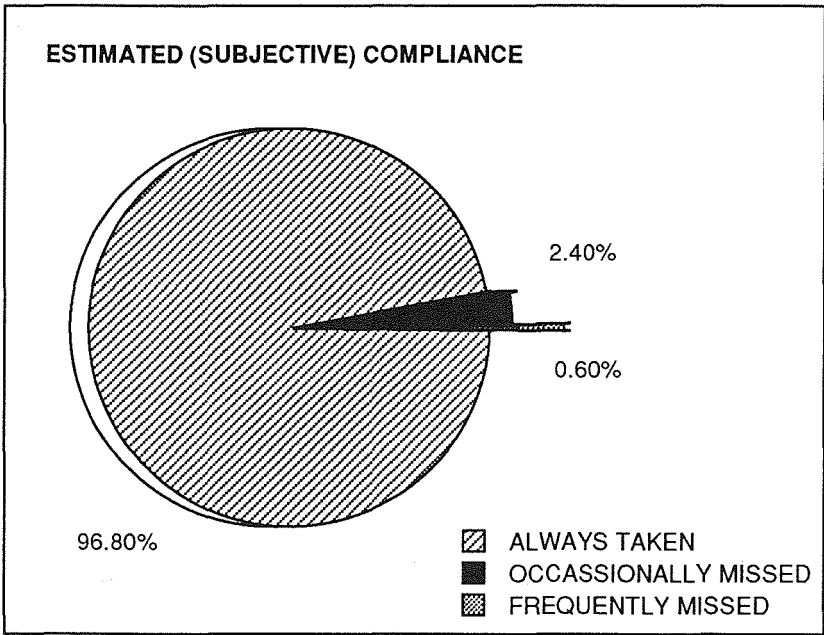
Fig. 4. Distribution of therapeutic drug users (among institutionalised elderly persons) by number of different drugs regularly consumed ( $n = 532$ ) (Malta, 1990)



Compliance was also subjectively assessed by carers. It was found that only 3% missed their therapy occasionally or more often. There was no difference in compliance between sexes (Figure 5).

A number of contingency tables were prepared to assess any association between selected variables under study. Some interesting results are tabulated (Table 4). It was noteworthy that no association existed between therapy for Diabetes Mellitus and that for Heart Disease, especially in view of the fact that, according to International Classification of Disease (ICD9) rules,<sup>4</sup> Diabetes "underlies" (death from) Ischaemic Heart Disease - and despite the high prevalence of both in the Maltese Islands<sup>3,5</sup>.

Fig. 5. Reported compliance with drug therapy regimen prescribed among elderly institutionalised persons. (Malta, 1990)



It was also noteworthy that time (in years) in an institution bore no relationship to the amount of medicines taken.

Factors influent on (or by, owing to the difficulty in assessing time relationships) independent living were assessed. It was found that heart disease - a presumably disabling condition, was not associated at all with loss of dependence. On the other hand arthritis - which may not be as fatal, was understandably closely related to loss of dependence.

Two other interesting findings were associations sought between independent living and the presence and amount of different drugs taken. Whereas with the former, there was no statistical relationship, with the latter, the relationship was very highly significant i.e. the more medicines taken - the more likely the loss of independence.

Table 4  
Result of statistical relationships tested in a survey on elderly institutionalised persons (Malta, 1990)

Variable	Associations tested Variable	Association
Regular general practitioner visits	Number of different drugs taken	-
Therapy for heart disease	Therapy for diabetes mellitus	-
Time (in years) in institution	Number of different drugs taken	-
Gender	Compliance with therapy	-
Independent living	Taking any drug therapy	-
Independent living	Number of different drugs taken	**
Independent living	Heart disease therapy	-
Independent living	Arthritis therapy	*

\*\* Very highly significant ( $P < 0.0001$ )

\* Highly significant ( $P < 0.001$ )

It is clear that these results are only preliminary, and that a more in-depth study needs to be carried out. In particular, the heterogeneity of the institutes render these incomparable, although it can be argued that all the residents as a whole constitute a particular population. It was found that the institutes varied considerably in the degree to which they continued to care for those elderly losing their independence. There were also considerable differences between the levels of drug therapy consumption among elderly in these homes.

## DISCUSSION AND CONCLUSION

While many of these results are self explanatory, there are some points worth further thought. A careful evaluation of the care and cost-effectiveness of some of these homes appears in order. In particular, it is evident that if homes are unprepared to meet the demands imposed by residents who are dependent on others to carry on with their everyday lives, then there must be more rigorous selection - as an ongoing process. On the other hand, it is socially more justifiable to continue to take care of elderly persons having adjusted to their peculiarities and these in turn to the environment of the Institute, once they lose some degree of independence. If some homes are to survive purely on the basis of selective care for people who can look after themselves, then this study would suggest careful attention to such factors as heaving drug usage and arthritis in the selective process. However, this data is cross-sectional and lacks a good control group.

It is recommended that further studies are carried out to assess such factors in other types of residence for elderly persons. A more careful assessment of social as well as health (subjective as well as objective) factors is strongly recommended. The physical health of elderly persons is known to be closely related to assessed subjective health<sup>6</sup>. To be fair, it is also found that the best predictor of symptom prevalence is the number of disease states, followed by the number of drugs used, and then age<sup>7</sup>.

Greater caution is also advised in prescribing drugs among elderly persons in Malta, particularly in view of the known drug interactions and adverse effects.

## ACKNOWLEDGEMENTS

I wish to thank Dr Grech, the Director of INIA, for supporting the survey. Thanks also go to other INIA staff members especially Ms. Vella and Ms. Scicluna. I would like to express my appreciation to the authorities governing participating homes and to the carers who filled in these questionnaires for their unlimited patience and excellent work.

## REFERENCES

1. Tuomilehto J, Cacciottolo JM, Vassallo A, Schranz A, Nissinen A, Grech A (1988). Trends in mortality from major non-communicable diseases in the middle aged population of Malta. *Rev. Epidem. et Sante Publ.* 36: 216-25.
2. Mamo JJ (1987). INTERSALT: an international study of electrolyte excretion and blood pressure. Results for Malta. (University of London, London School of Hygiene and Tropical Medicine).
3. Cacciottolo JM (1990). Control of cardiovascular diseases in the Maltese community. (University of Kuopio).
4. World Health Organisation (1977). International Classification of Diseases - 1975 Revision (9th). (WHO - Geneva). Vol 1, pp 722.
5. National Diabetes Programme in Malta. Final Report. WHO NCD/OND/Diab/83.2. (WHO - Geneva).
6. Svanborg A, Sixt E, Sunk V, Thornton JE (1988). Subjective health in relation to aging and disease in a representative sample of ages 70, 75, 79.
7. Hale WE, Perkins LL, May FE, Marks RG, Stewart RB (1986). Symptom prevalence in the elderly. An evaluation of age, sex, disease and medication use. *J. Am. Geriatr. Soc.*