The Mediterranean Osteoporosis (MEDOS) Study Questionnaire©

J. DEQUEKER1, J. RANSTAM2, J. VALSSON3, B. SIGURGEVISSON3, E. ALLANDER4, the MEDOS Study Group5•

Summary The Mediterranean osteoporosis study (MEDOS) questionnaire was designed by a group of specialists in bone disease from Southern Europe (MAB Group) and the WHO Collaborating Centre for the Epidemiology of Rheumatic Conditions, assisted by experts from WHO in Geneva and from the European Foundation for Osteoporosis and Bone Disease. The purpose of the questionnaire was to identify putative risk factors for hip fracture in a retrospective case control study applied during a prospective study of the incidence of hip fracture in 14 regions of Europe.

DESIGN OF QUESTIONNAIRE

The questionnaire was designed in lay English in order to be applied by trained interviewers, eventually in the local language and was structured on the following framework. Information was to be obtained on various indices of peak bone mass or density at maturity, the rate of bone loss thereafter and the liability to falls. As lifestyle factors are likely to change over a life-time, the questionnaire was to provide information over different periods of life, namely childhood, young adulthood and the recent past. The final questionnaire (version 16) used in the MEDOS Study also included information on the current quality of life on admission of cases with hip fracture and information on outcome and discharge from hospital after hip fracture, so that socio-economic factors could also be evaluated.

The questions incorporated in the core and final document included some selected from a number of previously validated questionnaires used in population studies. Others were devised by the MEDOS Project Group. The following questionnaires were consulted: osteoporosis questionnaires of the Jewish Hospital of St. Louis, USA; Centre Hospitalier de Toulouse, France; the quantitative food frequency physical activity and menstrual history questionnaires, University of North Carolina at Chapel Hill USA; WHO Tobacco smoking Survey questionnaire 83.4; The North Karelia National Public Health Institute; and the Stanford C4 questionnaire for cohort studies. The questionnaire comprised 19 subdivisions and 915 variables. The questionnaire is shown in appendix A.

TRANSLATION

The questionnaire was translated from English into Portuguese, Spanish, French, Italian, Greek and Turkish. For French, Turkish and Spanish languages the questionnaire in respective language was retranslated back into English by an independent translator. Detailed analysis of differences between the original and retranslated English versions were made by professional language specialists. No major differences were identified which might have influenced the coding of results.

RELIABILITY STUDY

A reliability study was performed in 12 of the 14 centres, not Toulouse and Ankara, including both cases and
controls. Two hundred twenty-eight patients or controls were reinterviewed by a different interviewer after a median time of seven days. The test for concordance used was Kendall's tau B which was higher than 75% in 80% of the non continuous variables. It should be noted, however, that a component of the good reliability was often based on the substantial numbers of negative responses for some questions, such as for questions relating to co-existing morbidity. Nevertheless, 100% Kendall's tau was recorded for several questions e.g. for stroke without hemiplegia, chronic diarrhoea, other diseases of the musculoskeletal system, forearm fracture, vertebral fracture. There were also good repeatability on the current use of anxiolytics, daily smoking, awareness of osteoarthritis (85.27%). A somewhat lower Kendall's tau, 60% - 70%, was recorded for information on chronic bone disease in families, neurotic disorders, polyneuritis, and recent immobilization.

For continuous variables correlation coefficients were calculated. In general they exceeded 0.90. Exceptions included maximum height during life (0.86), height in standing position (0.79), height in lying position (0.87), span-length measured (0.79), present weight (0.87), maximum weight during life (0.85) minimum weight after 25 years (0.75).

The 61 interviewers have been trained in order to standardize the interviews.

**POPULATION STUDIED**

The MEDOS questionnaire was applied prospectively in 2,816 patients above the age of 50, admitted to the hospital and in 5,369 age-sex-matched controls in 14 centres and 6 nations over a period of one year (1988-1989). The duration of the interview varied from 41 minutes to 90 minutes. The controls were either sampled from population registers, neighbours to cases, from persons having fallen but without hip fracture, or from hospital controls. All questionnaires were registered by optical reading. They were checked for completeness and logical errors. Where necessary they were returned to the centres for correction as part of an on-going quality control programme. The results and detailed analysis of the use of the questionnaire will be published separately.

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**Spain:** N. Castro, J. Valdeño, M. Jiménez, P. Antonio, E. Martinez Feria, R. Moruno Garcia, F.J. de Juan.


**Italy:** F. Celi, M. Sabatini, T. Santini, L. Luchetti, F. Ajelli, A. Camporeale, F. Carletti, C. Cepollaro.

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**REFERENCE**


**Correspondence to:** Dr. J.A. KANIS,
Department of Human Metabolism and Clinical Biochemistry, Medical School, Beech Hill Road, Sheffield S10 2RX, U.K.