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## EUROPEAN LONGITUDINAL STUDY ON PREGNANCY AND CHILDHOOD (ELSPAC)

Report on a Meeting of Principal Investigators

Bristol  
24 – 29 January 1992



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1992

EUR/HFA TARGET 7

This activity was organized by the WHO Regional Office for Europe to promote work aimed at achieving the following target in the health for all strategy.<sup>a</sup>

## TARGET 7

### HEALTH OF CHILDREN AND YOUNG PEOPLE

*By the year 2000, the health of all children and young people should be improved, giving them the opportunity to grow and develop to their full physical, mental and social potential.*

#### Keywords

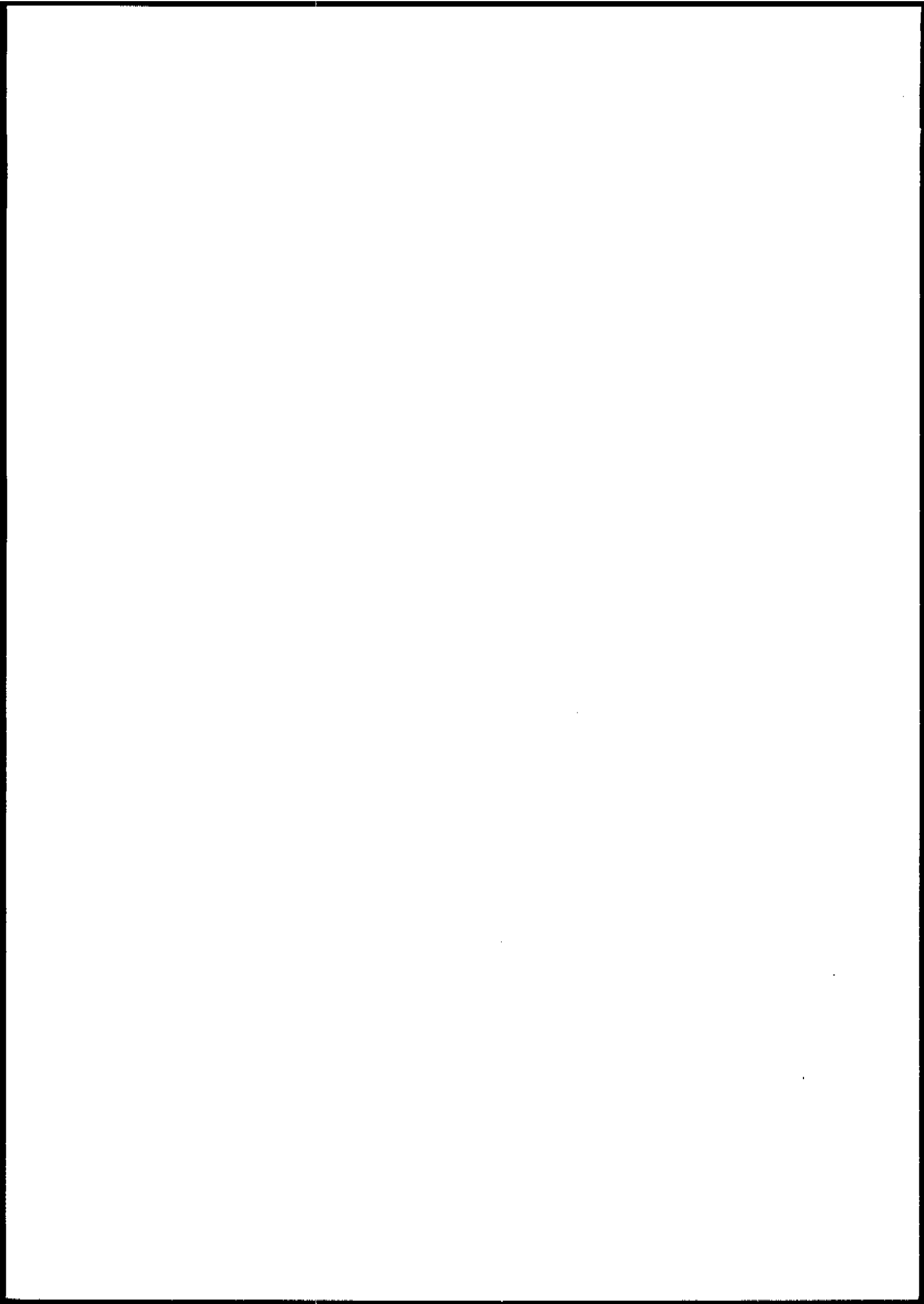
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<sup>a</sup> *Updating of the European HFA targets.* Copenhagen, WHO Regional Office Europe, 1991 (document EUR/RC41/Inf.Doc./1 Rev.1).

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## 1. Introduction

This was the 7th meeting of the representatives from centres participating in the European Longitudinal Study on Pregnancy and Childhood (ELSPAC). Six active centres (from Czechoslovakia, Greece, United Kingdom [Bristol and Isle of Man], Spain [Mallorca] and the Russian Federation) and three potential centres (from Ukraine, Sweden and Croatia) who wished to start the study were represented at the meeting. As all the active centres have recently started with the main phase of the study, this meeting was the first opportunity to compare some results and to share experiences and problems faced.

The meeting was hosted by the WHO Collaborating Centre for Research and Training in Paediatric and Perinatal Epidemiology, Institute of Child Health in Bristol.

The start of the meeting was extensively covered in Bristol by television, radio and newspapers. A video of the two televised news items was prepared for use by the other participating countries.

## 2. Progress reports from each country

### 2.1 The Russian Federation

The study is taking place in Jaroslavl, a large industrial city, 240 km to the north of Moscow, with a population of 650 000. The difficult economic situation is having a dramatic effect on the birth rate which dropped in Jaroslavl from 9 000 in 1988 to 6 000 in 1991 and is predicted to be less than 5 000 in 1992. Nevertheless, the project is running and has the motto 'Children of Russian Perestroika'.

The initial recruitment of mothers used the media together with posters advertising the study in various places. Recruitment was made via booking antenatal clinics where the mother received an envelope with the first 3 questionnaires and an information booklet on ELSPAC. She returns these questionnaires on the 2nd or 3rd visit to the clinic, having filled them in at the appropriate gestation.

Eligible mothers are those with expected dates of delivery from the 1 January to 31 December 1992. 1 906 mothers have been enrolled in the study via antenatal clinics during the period beginning of May to end of December 1991. Recruitment rates are between 90 and 95% and the response rates to the antenatal questionnaires are 91% for the maternal questionnaires and 72% for the partner's questionnaire. However, not all of the returned questionnaires had been fully completed.

Non-responders are followed up with home visits.

Mothers enrolling later into the study have a modified set of questionnaires.

The Russian ELSPAC study will include all outcomes of pregnancy from 20 weeks gestation onwards. 99% of all deliveries in Jaroslavl occur in public maternity homes. Mothers receive a congratulations card and are then given post-natal questionnaires to fill in at 6 weeks post-delivery. These questionnaires are to be returned to the district paediatricians. The medical personnel in the antenatal and neonatal clinics fill in the delivery questionnaires and the neonatal admissions questionnaires.

The ELSPAC team has given a presentation of the ELSPAC programme to the Ministry of Public Health of the Russian Federation, and to the regional Jaroslavl Soviet of Peoples' Deputies. The finances for the study have come from the Ministry of Public Health for Russia together with some from the Jaroslavl region.

The head of the ELSPAC team in the Russian Federation is Dr Rimma Ignatyeva and her scientific team from the All-Russian Semasko Institute for Research on Social Hygiene, Economics and Management of Public Health (Moscow) includes distinguished obstetricians, paediatricians, epidemiologists, psychologists, sociologists and specialists in public health. In Jaroslavl, a national committee for facilitating the execution of ELSPAC has been established with V. Tereshova, the first woman cosmonaut, as honorary chairman (Jaroslavl is her native town). The ELSPAC project is repeatedly publicised on the television, and on radio. The ELSPAC team found publicity to be very useful for the progress of the study.

The ELSPAC Russian team is especially interested in collaborating over specific optional studies on the cohort to look at the possible influences of environmental pollution on antenatal and postnatal health. Discussions are ongoing with the Bristol team over collaborative efforts in looking at levels of toxic metals and essential trace elements in the umbilical cord and in maternal blood.

## 2.2 Czechoslovakia

The study is currently being conducted at two centres: Brno and Znojmo. A further study is planned for Bratislava; questionnaires have been translated into Slovak for this study, which will be piloted during March 1992. This project will be coordinated from the national centre at Brno.

The following figures are from Brno: recruiting dates: 1 October 1990 to 1 February 1992, this represents a 16-month cohort, the cohort period has been extended from that originally planned so that approximately 5 000 women will be recruited. The first birth to a mother participating in the study occurred during March 1991. The 6 month health condition questionnaire is being given at 8 months.

The return rates for questionnaires are approximately 85% for mothers' and 70% for fathers' prenatal questionnaires and are approximately 80-85% for postnatal questionnaires. So far, 8 614 questionnaires have been coded and 7 780 keyed.

The ELSPAC project in the Czech and Slovak Republics is financed by the Government. Recent changes in the organisation of health services in Czechoslovakia have caused some problems with relationships with obstetricians, but these are being addressed and will not threaten the continuation of the project. Good co-operation of parents has been noted, in contrast to the poor co-operation from paediatricians.

In general, the study in Brno is progressing extremely well.

### 2.3 United Kingdom, Isle of Man

The Isle of Man has only about 1 000 births per year. The study aim is to currently cover a period of 15 months' births. Funding comes from a variety of sources including the Department of Health on the island. Further funding, is however, needed to ensure adequate follow-up of the study sample.

Mothers with an expected date of delivery between 1 January 1991 and 31 March 1992 are being included in the study. Recruitment is good, this is believed to be due to the presence of ELSPAC personnel in the antenatal clinics. Mothers are all introduced to the survey on their first antenatal visit, and are given questionnaires to complete. Non-responders are reminded at subsequent visits.

Recruitment rate is about 98% of the eligible population. So far there have been 848 babies born, 8 stillbirths and 24 miscarriages. The response rate for the questionnaires is 78-82% for the antenatal questionnaires and 67% for home and lifestyle questionnaires administered at delivery. It is hoped to improve this by follow-up visits. Response rates for post-natal questionnaires is 40-60%; again, it is hoped to improve this by follow-up visits.

Coding and keying of questionnaires is up to date. Some, but not all, of the questionnaires have been entered twice to improve accuracy.

### 2.4 United Kingdom, Bristol

15 000 pregnancies are expected, with mothers with an expected date of delivery between 1 March 1991 and 31 December 1992 are being included in a 20-month cohort. The cohort has been extended as the initial recruitment was poor. The first child was born on 31 December 1990, 4 months premature. Special efforts have been made to recruit women as early in their pregnancy as possible. Recruitment has been made via direct contact with women at pharmacies, ultrasound scan clinics, family planning centres and through the health services. Questionnaires are sent by post; so far 90% of the prenatal questionnaires sent have been returned. Response to the partner's questionnaire has been weaker, with 70% of those questionnaires sent being returned. The proportion of the population enrolled in ELSPAC stands at 90%. So far there have been approximately 6 000 births.

The project has been publicised on television and radio and through the press. Regular newsletters, Christmas and birth congratulation cards are sent to mothers. A separate newsletter is sent to professionals involved in the project.

Due to shortage of money, so far only one third of the questionnaires have been coded. Coding is being done by part-time workers at home. Logical errors in coding are being detected by computer.

Approximately 10% of the prenatal questionnaires have been keyed. Keying is done by an outside contractor; a double entry system is used to reduce errors.

## 2.5 Greece

The Greek survey is carried out by the Institute of Child Health in Athens and funded by the Greek Ministry of Health. The study in Greece has also been presented on the media; there have in addition been two presentations to the obstetric and Gynaecological Society and one to the Greek Paediatric Society.

The original study design had been to prospectively study all pregnant women within one geographic strip of Athens. However, there have been difficulties with the project as the majority of antenatal care is provided privately in Greece by a large number of obstetricians in private clinics. Enrolment cards were placed in obstetricians' offices, scan clinics and in health clinics. 450 mothers per month were expected, 100 mothers per month were actually recruited. In view of this poor response it was decided to collect data on pregnancy retrospectively, with questionnaires being administered at maternity hospitals. This started in September 1991. 1 552 mothers were approached, 2-3% refused to join the study, 16% were already enrolled in the study; the number of questionnaires returned from these mothers is not yet known. Of the retrospective questionnaires, 77% of maternal questionnaires and 50% of the partner's questionnaires have been returned so far.

330 prenatal questionnaires have been keyed and 740 coded. The cost of using an external agency for keying and coding was considered too high, and would require 25% of the budget. Students have been used for coding and keying, but there have been problems with training and supervision. Coding and keying have consequently been delayed due to severe financial problems.

## 2.6 Spain

The study design in Spain anticipated 6 500 births per year on the island of Mallorca. However, the strictures of the Ethics Committee made the total difficult to achieve. In addition, there are problems with compliance with the many obstetricians on the island. The design is such that pregnancy questionnaires are handed to eligible mothers directly by the midwives and obstetricians. In the event, only 50% of eligible mothers appear to have been given such questionnaires. Of 2 280 questionnaires given out, only 1 500 have so far been returned. After delivery, the response rate is anticipated to be around 70% of births. The researchers are allowed to make two reminders by phone, but no other intervention.

Due to financial problems, the team has not yet started coding.

## 2.7 Other possible participants

### Ukraine

The Ukraine expressed firm intention to join ELSPAC. It is proposed to include 4 centres with differing environments. Government support has been requested and support from donors in the United States is being sought. It is intended to begin a pilot study during the summer of 1992, and to start the main phase of the study from January 1993.

### Croatia

It was intended to base the study in Zagreb, with an expected birth rate of 11 000 births per year, but in view of the problems experienced in Athens, a smaller town may be more appropriate. It is hoped to pilot the study during the next few months and to start with the proper survey in 1993. The study would allow an assessment of the effect of the war on the outcomes of pregnancy and child health.

### Sweden

Dr Lindqvist felt that it might be easier to raise funding for a smaller project, possibly involving 1 000 mothers, which may in turn lead to further ELSPAC projects being launched involving more mothers. She is still keen to carry out such a study in Malmö, but has difficulty in interesting senior Swedish scientists.

## 3. Features of design

### 3.1 Response rates

It was agreed that high response rates were extremely important to ensure. It was therefore important to identify reasons for non-response as early in the survey as possible. This would allow appropriate changes to be made in the conduct of the study to increase the response rate.

It has been agreed that the minimum response rate acceptable would be 80% of births in the area. This response rate was not being achieved by either Spain or Greece.

The follow-up of non-responders is important. It was felt that the following information should be obtained at least for a proportion of the non-responders: age of mother; some social index variables (education/occupation); presence of partner; partner's occupation; parity; birthweight and outcome of child; ethnic origin of the mother; and specific reasons for non-response. This information is probably easiest to collect at birth, but there may be some problems with ethical considerations in women that have already refused to take part in the study. This should be pursued.

### 3.2 Enrolment at birth

Although it is impossible to enroll all mothers since some will only arrive in the area shortly before delivery and others will not have booked until they go into labour, the proportion from whom information is collected retrospectively should be minimised. The strategy in Greece whereby 85% of mothers were enrolled after delivery was considered unsatisfactory as it disregarded the importance of prospective information collected during pregnancy.

In consequence of this, Greece was not able to satisfy the ELSPAC requirements with its current study design. It was felt that the problem was at least in part due to the fact that the area which is being studied is not politically or organisationally defined and this made it difficult to cover it with resources available to the study group in Athens. Dr Adam suggested that the study be limited to a smaller area, including approximately 1 000 mothers, in order to increase efforts by concentrating the limited human and financial resources in this area. The study could be then carried out more successfully with a high proportion of mothers being recruited during pregnancy. This was generally approved by the group, and by the Coordinating Committee. Additional financial support from the Ministry of Health would of course be a more acceptable solution than the reduction of the study.

### 3.3 Intervention

It was felt extremely important to avoid interventions that would change the attitude of the parents towards the survey. For example, if the study team were to send out advice to mothers, then mothers may feel they should answer the questionnaires, giving the type of answers they assumed that the study would want, rather than reporting truthfully their own opinions, attitudes and actions.

Consequently, Greece has decided not to send out a booklet they had intended to, which conveyed advice aimed at preventing child abuse. The Isle of Man raised a question concerning the inclusion in their Newsletter of mothers asking for contact with other mothers of like interest or experience and this was decided against.

It was agreed that the nature and extent of all interventions with the ELSPAC cohorts, should be documented and details supplied to the coordinating committee. It was suggested that Czechoslovakia should document the use of their Helpline which is supplied to ELSPAC mothers. It would be important to identify who had contact with the Helpline and what advice was offered, so that any bias in the questionnaires of such mothers would be possible to assess during data analysis.

### 3.4 Procedural differences

One of the problems in the study design which allows centres to add on features of particular interest to themselves, lies in the fact that merely by increasing the length of the questionnaire, one may be changing the comparability between centres. Some study areas have got around the problem of over-long questionnaires by splitting them into two or more parts (c.g. Bristol). Others have combined two already long questionnaires into one exceptionally long questionnaire (Greece). It was agreed that as far as possible people should try and keep the questionnaires as designed, but the overriding feature was the need to keep the response rate as high as possible. This raised once again the necessity for having such long questionnaires. It was pointed out, however, that there was little evidence in the literature or from our own data, that the length of questionnaire influences the response rate. Of far more importance is the approach made to the respondent and the pleasantness of the appearance of the questionnaire.

This raised the problem of the need for the large number of different questions in the questionnaires and this was held firmly in mind when the 18-month questionnaires were reviewed and finalised during this meeting.

One other possible way in which response rates may be improved lies in the wording and ethos of the reminder letters. These should be friendly and cajoling rather than accusatory and demanding. The number of reminder letters should be chosen to maximise the response rates.

One important procedural problem relates to the separate posting or otherwise of the father's questionnaires. Regardless of cost, it is important that fathers be given the opportunity to return their questionnaire without their partner being able to read it. Consequently it is important that they be given a separate envelope.

### 3.5 Death Questionnaire

Professor Berry presented the Death Questionnaire and asked whether there had been any problems in its use. Countries were encouraged to start using this as soon as possible on all stillbirths, neonatal and postneonatal deaths. It is designed so that information may be collected relevant to the uniform classification of perinatal deaths (using the Wigglesworth classification) and the identification of sudden infant deaths.

## 4. Coordination of the study

### 4.1 ELSPAC Coordinating Committee

The role of the committee is to coordinate the study between the ELSPAC meetings and to ensure that all studies within ELSPAC are carried out in a comparable manner so that comparison between centres may be reliable; such comparison will be extremely valuable.

The Coordinating Committee (CC) discussed a number of problems that had arisen during the course of the meeting:

(a) It was agreed that the study in general is progressing satisfactorily. Major problems related to the design and methodology of the study were only found in Spain and Greece. It was felt that a visit of the group experts to the centre in Spain may help to find ways to increase the response rate. The high proportion of retrospectively filled-in questionnaires in the centre in Greece was found unacceptable. The main reasons are insufficient resources to make sufficient intensive efforts to recruit mothers during pregnancy. Two solutions are possible: (i) to reduce the size of the study area or (ii) to obtain additional resources.

(b) The CC expressed a deep concern with regard to the decreasing support for this study from WHO. The hope was expressed that the WHO Regional Office for Europe will continue to pay adequate attention to the study which was initiated by WHO. This is vital for most ELSPAC centres.

Several applications for EC funding (declarations of intent for CEC BIOMED concerted action) will be made. This may help to reduce coordination expenditures for centres in the EC countries, primarily for the coordination centre in Bristol. However, two centres located in central and eastern Europe (plus four potential centres in Ukraine) will apparently not benefit from it.

(c) It is of importance that the Coordinating Committee be consulted in advance of:

- Protocols used in all centres;
- Any changes made to questionnaires;
- Any advice given to mothers in conjunction with questionnaires, especially if this comes from the investigating team;
- Any intervention with health care, especially if this only involves a subsample of mothers.

Each country should document exactly what is happening in regard to the procedures being used.

(d) The CC and representatives of all ELSPAC centres met infrequently and therefore had problems with communication. The aim would be to have meetings every 6 months and meanwhile it is important to correspond as often as possible. Correspondence to Russia was virtually impossible, but it was hoped that the new method of using the British Embassy in Moscow would speed this up considerably.

Dr Dragonas is doing a noble job in getting a Newsletter together, combining information from the various study centres. Dr Prokhorskas has offered his assistance in improving the lay-out of the Newsletters and in distributing them from Copenhagen.

Centres should not let worries about the quality of translation in their letters and documents restrict the flow of information to the coordinating committee.

(e) It was agreed that the ELSPAC general rules should be reiterated to each participating country and that each country should circulate the relevant information to the CC.

The ELSPAC rules need to be followed if comparison between different ELSPAC centres is to be made.

These rules are as follows:

1. A total geographic population should be used.
2. The mothers should be contacted as early in pregnancy as possible.
3. Both livebirths and fetal deaths occurring after 20 weeks gestation to residents of the area should be included.
4. It is recommended that there should be at least 5 000 births in each participating centre.

5. It is recommended that the study area should comprise both urban and rural components. It should have a reasonably stable population.
6. Mothers resident in the area at the time of delivery should be followed up as far as possible, even if they move out of the area.
7. The children should be followed up until the age of 7 years.
8. Parents should complete questionnaires on their own without help unless they specifically request help.
9. In principle the questions asked in each country should be identical, except in those categories where culture-specific questions should be asked (e.g. social conditions, educational classifications).
10. Total confidentiality should be maintained for all information supplied on self-completion questionnaires.
11. Each country may add to the study design, but they are not allowed to leave out items except when these had been deemed optional or agreed by the ELSPAC Coordinating Committee.

#### 4.2 Central Coordinating Office

The Bristol Centre, having the status of WHO Collaborating Centre for Research and in Paediatric and Perinatal Epidemiology, acts as Central Coordinating Office for ELSPAC.

#### Translations and back-translations

The Central Coordinating Office is responsible for ensuring that the questions asked and the coded data received are comparable across countries. To this end, it is important that back-translations and translations are checked at the Bristol Centre before they are put into the field. This has, however, not always happened.

At the moment, the following translations and back-translations have been received and checked in central office.

SPAIN	About Yourself Having a Baby Partner's Questionnaire My Baby Mother's Post-Partum Partner's Post-Partum Delivery Questionnaire Motherhood Fatherhood Death Questionnaire	
GREECE	About Yourself Having a Baby	(amalgamated)
CZECHOSLOVAKIA	About Yourself Having a Baby Partner's Questionnaire Delivery Questionnaire	
UKRAINE	About Yourself Having a Baby	

Although Russian translations and back-translations were received for earlier versions of the questionnaires, they are still required for the final versions of the questionnaires that were put in to the field.

#### Coding and keying

The Central Office is also responsible for instructions on coding, keying and editing data before its transfer to Bristol. It is very important that the same coding rules be used in each centre. There was some discussion about the problems of whether a code 7 (Not Applicable) or code 8 (Left blank) should be used. It was decided that it was immaterial what was coded since the editing process would substitute the correct number.

The major concern is over the coding of items where there maybe a large number of different written answers. It was agreed that whenever possible these should be simply treated in the following way:

\* Key the text verbatim.

\* When all the data for a particular questionnaire have been keyed, a complete list of responses can be produced by the computer. These can then be assigned individual codes and can be entered into the data base.

This system has a number of advantages: all the information contained in a questionnaire is retained. The responses to these questions can be keyed by a skilled typist who will not have to look through a long list for the appropriate code for each response. This will speed the initial coding and keying of data. The coding will be more accurate as it is carried out when all the possible responses are known. The coding can be altered at any time if desired. The coding is quicker, as it is done only once for each individual response.

Mr Simmons, Bristol, has been asked to produce a paper on this method of coding.

#### 4.3 Finances

It had been agreed at the previous meeting in Budapest, that in order to help cover the costs related to the international coordination of the study (checking of back-translations etc.), a contribution of pounds sterling 4 000 per annum be asked from each participating country. Although the Central Office was reluctant to do so, the need for the necessary finances predominated and a request for this money was sent to each country that is either participating, or which intends to participate. At the moment, the position is as follows: Czechoslovakia and Russia are unable to send money out of the country; money is being requested by Susan Kilburg from funding agencies in the USA for a contribution for the Ukraine; Croatia is unable to subscribe to this at the moment as there are still major political problems in the country; the Isle of Man - funds have been requested and agreed; Greece - funding has been budgeted for; pounds sterling 1 500 of the money towards the Coordinating Centre has been given to Dr Dragonas, a member of the Coordinating Committee for her trips to and from Bristol; Spain has requested such funds and hopes to forward a proportion in due course.

The work done by the Bristol Centre so far, even without basic financial support from the national government, was very much appreciated by all the participants of the meeting. Very shortly the first data will be arriving in Bristol for comparative analyses and it is important to be able fund somebody to carry these out. It was therefore agreed that an attempt should be made to obtain funds from the EC for the central coordination of the study and for specific focussed studies. The meeting considered 4 separate EC proposals: two were to go to the Biomedical and Health Research Programme (one on the aetiology of preterm delivery, and the other on identification of adverse effects of maternal drug intake during pregnancy); it was agreed to approach the Environmental Programme for a study on housing and health, with particular emphasis on measuring house dust mite levels in the different countries; and finally a proposal to assess effects of radon on the long-term development of the children could be addressed through the Nuclear Fission Programme (involving the measuring of radon in 1 000 homes in each centre). Professor Golding agreed to complete and submit these proposals.

#### 4.4 Computing

Part of the investigations of the Central Office had been to ensure that data received from the various study centres could be read on the Bristol computer system. This had now been successfully completed for Russia and Czechoslovakia, although the Isle of Man data posed some problems. There seemed to be no insurmountable problems in any transfer of data regardless of the different types of machine used in the different study centres.

One of the problems that countries might have would be in the back-up of data. This has to be the responsibility of the individual countries. Back-up disks should be stored in separate buildings in case of fire. In addition, questionnaires should be coded and keyed as soon as possible, so that if questionnaires are damaged, then the information is not lost.

#### 5. Hypotheses raised and plans for analysis

It is important that results should be published as soon as possible to help ensure further support for the project.

At the meeting, the Bristol centre had circulated the frequencies of the results on different questions in the questionnaires up to and including the 6 week post-delivery questionnaires. It was suggested that each individual country, once some initial data had been keyed, should compare their frequencies with those of Bristol, so that: (a) differences in frequencies can be used to identify any possible problems in interpretation and translation; (b) cross-cultural comparative studies can be planned.

It was suggested that a summary of the progress of the study so far be published. This should include details of the study design, methodology, optional studies, aims and hypotheses that are likely to be tested. The summary should be written by Professor Golding and published in the journal "Paediatric & Perinatal Epidemiology".

Documentation of the reasons why individual questions were included in the survey in relation to the hypotheses being addressed should be prepared. These are now available for the 6-month questionnaires and the 18-month questionnaires.

One of the problems raised concerned the general opinion of the perceived lack of focus of the study. Professor Golding pointed out that indeed this study was focussed, there were a number of well-documented foci and that every question or group of questions was addressing particular hypotheses. Some of the original hypotheses were outlined in the original ELSPAC documents. These are reproduced below:

The overall aims

1. To determine whether certain biological, environmental, social, psychological and psychosocial factors are associated with the survival, health and ability of the fetus, infant and child and to assess whether the same factors appear to be influential to a similar degree in each participating country.
2. Although the study will not itself make any health service provision, it is designed to identify strategies that may improve children's health, and to test them, using appropriate research methods.

These research objectives include a large number of specific research questions which may be addressed. For example:

3. Is maternal stress during pregnancy related to a poor outcome? In particular, does the measure of anxiety using a life-events scale predict spontaneous onset of preterm labour, neonatal morbidity, difficulty in establishing breast feeding, abnormalities in infant temperament or delay in achievement of milestones.
4. Apart from stress, what other social, psychosocial or environmental characteristics of pregnancy are significantly associated with the onset of preterm labour, fetal growth retardation, late fetal death, neonatal problems, infection in infancy, growth in childhood?
5. Does the infant temperament differ between the infants who had been growth retarded, those delivered preterm and the rest of the population? How does the 6-month temperament relate to the mode of delivery, the interventions during labour or the child's early contact with his/her mother. Are any other adverse outcomes associated with such interventions?
6. Are there any indications of adverse effects of screening procedures, such as ultrasound, amniocentesis or other obstetrical or neonatal diagnostic or treatment interventions on the health of the child?
7. Are maternal attitudes to health care associated with adverse outcomes of pregnancy, with neonatal problems or with increased risk of morbidity in childhood?

8. What social, psychosocial or environmental factors precede the onset of severe maternal pre-eclampsia in pregnancy? What are the effects on the developing child of a history of severe maternal pre-eclampsia? In particular, does the child himself have a high blood pressure?
9. In what ways do surviving infants of low birthweight differ from the rest of the population in their health and development? Are there differences between infants who are of low birthweight because they were growth retarded from those who were low birthweight because they were delivered preterm?
10. What is the prevalence of acute and chronic lower respiratory disease in childhood? Does this vary from country to country? What associations are there with maternal smoking in pregnancy, parental smoking in infancy, neonatal respiratory distress, type of housing or method of heating or cooking?
11. Are children who are living with a single parent at decreased probability of being healthy and developing normally? Can this be statistically 'explained' by factors such as stress and environmental conditions?
12. Are there any detectable positive or negative effects on the health and development of the child if he/she is left in a creche in early infancy while his/her mother is at work?
13. How much impairment, disability and handicap results from accidental injuries? What features of a household are associated with increased risk of accidents?

It can be seen from this list that variables can be considered as both outcomes and explanatory factors. It is the ability to be able to look at the data from the survey in both ways that seems to us to be particularly valuable.

It should be remembered, however, that this list of hypotheses is only a minimal list, there are many other hypotheses that can be addressed within this study.

Priorities for cross-cultural analyses at the Bristol Centre will depend on the funding available. Meanwhile individual countries are encouraged to analyse and publish their own data. It is strongly recommended that every country that had published on ELSPAC should send copies of the documents to the Bristol Centre, so that they would be archived for further reference.

#### 6. Main conclusions and recommendations

1. In general the study is progressing satisfactory in all centres. Some methodological problems, which require urgent consideration and action were found in the centres in Greece and Spain.
2. It was decided to send the progress summary of the study to the Ministries of Health of the respective countries for information. It was felt that this may help the ELSPAC centres to get increased support from their governments.

3. All ESPAC centres are facing/expecting some financial problems. Shortfalls due to lack of full financing have resulted in Greece in failing to enrol appropriately during pregnancy, the centre in Spain was failing to cover the whole of the island of Mallorca and the Bristol team was failing to code and key the data that was accumulated.

In view of the decreasing support from WHO/EURO the major financial problems are related to the international coordination component of the study.

4. A summary report of the meeting should be published in the journal "Paediatric & Perinatal Epidemiology", spelling out more clearly hypotheses and results.
5. Each country should compare their preliminary results against those from the Bristol centre to check the overall accuracy and generate hypotheses for further study.
6. The methodology of the optional studies should be written up so that other countries could carry out similar studies.
7. It is recommended that the keying in of text rather than coding should be carried out using the techniques applied in Bristol.

Annex  
**LIST OF PARTICIPANTS**

ELSPAC Coordinating Committee

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