PREGNANCY AND DRUGS

THE VIEWS AND KNOWLEDGE OF PREGNANT MOTHERS

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ABSTRACT

Thirty pregnant mothers and four medical doctors were interviewed to determine their views about drug usage during pregnancy and their knowledge of possible harmful intra-uterine effects. In this study drugs include alcohol, cigarettes and pharmacological agents. A content analysis was performed on the information obtained from all the subjects. It showed quite definite trends in views amongst the pregnant mothers. These trends and other aspects of the results are discussed with reference to the relevant literature. The main conclusions are that there exists a distinct gap between the knowledge pregnant mothers have about harmful intra-uterine effects and current medical and scientific opinion. Further, within the three drug areas explored, least is known by pregnant mothers about the harmful effects of alcohol on the foetus.

INTRODUCTION

It is estimated that two out of every one hundred babies born alive in New Zealand will have major congenital abnormalities. A further two or three per hundred will have minor abnormalities and lesser degrees of mental retardation (O'Hagen, 1979). At present, there is little knowledge about the cause of these abnormalities and probably in less than 15 per cent is there any identifiable agent or factor involved (Rementeria, 1977). Genetic factors and abnormalities of the chromosomes and genes have been identified as a cause of this small percentage of defects (Rementeria, 1977). It is now becoming recognised that drug usage during pregnancy can influence the developing and growing foetus. This has aroused interest in the possibility that cigarette smoking, excessive drinking of alcohol, and pharmacological agents taken during pregnancy may be an important cause of birth defects and low birth weight babies.

In New Zealand, estimated rates of cigarette consumption, alcohol consumption, and the issuing of prescribed medication are currently rising (see Appendix A). As such, during pregnancy many women and foetuses could be at risk from the effects of one or more drugs. Even if the woman herself does not smoke or drink, it is highly likely that on some occasion during her pregnancy she will take the occasional asprin or disprin, or inhale the carbon monoxide from the cigarettes of others.

This present study is an exploratory investigation to determine the views a group of pregnant mothers have about drugs taken during pregnancy and the knowledge they have of those drugs, known or

thought by medical and scientific opinion, to exert harmful intro-uterine effects. Drugs in this instance will include cigarettes, alcohol, prescribed medication, and non-prescribed licit and illicit drugs. The information obtained from this group of pregnant mothers will then be compared with that given by a group of four medical doctors and that available in the current scientific literature.

In this report a review of the relevant literature will first be given. This will be followed by a description of the methodology employed in the present study. Results of a content analysis of data obtained from both groups of subjects will then be presented. Finally, a discussion of this study's findings will be given, followed by any final conclusions.

REVIEW OF LITERATURE

Cigarettes

The estimated consumption of cigarettes within New Zealand is currently rising (see Appendix A Table 1). However, the incidence of smoking among men is declining, while among women, especially of child bearing age, it is becoming increasingly common (Hay, 1979). In 1978 among New Zealand women, an estimated 30 per cent aged between fifteen and nineteen years, 39 per cent between twenty and twenty-four years, and 38 per cent between twenty-five and thirty-four years of age smoked cigarettes (Hay, 1979). Nearly 60 per cent of all Maori women smoke compared to 30 per cent of all non-Maori women. The rise in the number of women smokers in recent decades is reflected in the rising incidence of lung cancer, cardiovascular disease and other smoking related diseases among women, with Maori women having what is probably the highest lung cancer rate in the world (Health, 1980).

Surveys carried out in other countries show similar general trends in women's smoking behaviour. Healey (1979) reported that 31 per cent of Australian women smoke regularly, an incidence which is similar to that found in Pakeha women. In 1976, 52 per cent of United Kingdom women aged between sixteen and twenty-four years, and 47 per cent between twenty-five and thirty-four years of age smoked cigarettes (Capell, 1978). Overall, between the years 1949 and 1976, the average consumption of cigarettes by United Kingdom women rose steadily from 50 cigarettes to 120 cigarettes per week. Data compiled by the American Cancer Society shows that the only group of individuals which currently continues to show a rise in cigarette smoking is teenage girls (Ray, 1978).

Many suggestions have been forwarded to explain this upward trend in women's smoking behaviour. One suggestion is that advertising has been very careful to give a very positive image of the woman smoker. Invariably, the woman smoker is presented as feminine and desirable, as well as being a symbol of power and assurance of the type that many women today would wish to share on equal terms with men. Other suggestions include the possibility that women have not heeded anti-smoking messages to the same extent as men, plus the increased affluence among many women in the general population (World Health, 1980).

In New Zealand Fergusson et al (1979) examined the incidence of cigarette smoking during pregnancy of 1248 women involved in the Christchurch Child Development Study. It was found that 26 per cent of women were smoking throughout pregnancy with a further 8 per cent smoking at some time during pregnancy. Smoking during pregnancy was found to be related to the women's social background: younger women, non-European women, women with no formal educational qualifications, women of low socio-economic backgrounds, and women of ex-nuptial infants tended to smoke more during pregnancy. In the United Kingdom, Graham (1976) found that the incidence of smoking during pregnancy inversely related to social class. She also found that it increased with age and parity.

Several studies have investigated changes in smoking behaviour of women while pregnant. Conflicting results have been found. In New Zealand, Fergusson et al (1979) found that of the 503 women who smoked prior to pregnancy: 327 (65%) continued to smoke during pregnancy, 101 (20%) managed to give up before the second trimester, 19 (3.8%) after the second trimester, and 56 (11.2%) made some attempt

to stop but resumed the habit by the second or third trimester. Contrary to these findings Baric and MacArthur (1977) in the United Kingdom found that out of the 103 smokers in their survey prior to pregnancy: 35 per cent continued to smoke during pregnancy, 43 per cent reduced the amount smoked permanently, while a further 9 per cent cut down in their smoking temporarily. The remaining 13 per cent of smokers either stopped smoking and then restarted, or increased their cigarette intake. In a much smaller United Kingdom study, Graham (1976) found trends among pregnant smokers similar to those of Baric and MacArthur. In her study, 8 (35%) women continued to smoke during pregnancy, 10 (43%) succeeded in giving up or cutting down, and the remaining 5 (22%) either smoked the same amount or more during pregnancy.

Many studies have investigated the possible effects of smoking during pregnancy on the developing and growing foetus. When factors such as socio-economic situation and maternal age have been controlled, differences have been found between the new born babies of smokers and non-smokers.

Smoking during pregnancy has been shown to lead to intra-uterine growth retardation, with the babies born to smokers weighing 200 grams on average less than babies born to non-smokers (Goldstein, 1977; Meredith, 1975; Meyer & Tonascia, 1977). This growth retarding effect has also been shown to be consumption related and is most pronounced in heavy smokers (Butler, 1977). The peri-natal mortality rate has also been reported to increase by 20 to 35 per cent depending on the extent of maternal smoking (Meyer & Tonascia, 1977; Goldstein, 1977). A recent report by Everson (1980) suggests that cigarette smoking among pregnant women provides

exposure that may affect the cancer risk among their offspring in later life. Maternal smoking during pregnancy may also affect physical growth, mental development, and behavioural characteristics of children at least up to the age of eleven years (US Surgeon General, 1979). Studies indicate that if a mother stops smoking at the start of pregnancy there is no adverse effect on growth (World Health, 1980).

Graham (1976) examined the views pregnant women hold about smoking during pregnancy and found that these views are related to the smoking behaviour of women. Non-smoking women tend to endorse scientific opinion about maternal smoking whereas the majority of smokers tend to reject the scientific information.

Alcohol

The estimated consumption of absolute alcohol per head of population in New Zealand rose from 5.4 litres in 1955 to 7 litres in 1971, and to 8.4 litres in 1979 (see Appendix A, Table 2). In international terms, this places New Zealand in the top twenty alcohol consuming nations, drinking less on a per capita basis than France, West Germany and Australia, but more than England, Sweden and many other nations (Casswell, 1980).

The distribution of alcohol consumption within New Zealand is similar to the pattern set in other countries. Namely, that the majority of drinkers consume a small amount of alcohol whilst a minority, predominantly male, drink large amounts (Stacey & Absolom, 1980). Casswell (1980) found in a national survey of self reported alcohol consumption by New Zealanders, that the majority of New Zealanders (65%) drink an average of 20 mililitres or less of absolute alcohol per day and a minority (9%) drink 60 mililitres

or more of absolute alcohol per day. This accounts for almost two-thirds of the total amount consumed.

Results from this national survey indicate that the drinking patterns of New Zealand women differ considerably from those of New Zealand men. Irrespective of age, marital or occupational status, educational level, race or geographical location, New Zealand men consistently show a higher frequency and intensity of alcohol consumption than New Zealand women (see Appendix A, Table 3). It is estimated that one in nine New Zealand men are likely to be heavy drinkers, that is consume over 100 millilitres of absolute alcohol per day, while less than one in twenty women appear to drink at this high level (Stacey & Absolom, 1980). New Zealand women are more likely than New Zealand men to be abstinent, infrequent, or light drinkers. They are also more likely to use alcohol in conjunction with medically prescribed drugs (Stacey & Absolom, 1980).

Alcoholism in women, in terms of hospital admissions, has risen substantially in many countries, including New Zealand. During a 13 year period in Canada (1965 to 1977), the annual age standardised death rate from alcoholic cirrhosis in women rose from 1.1 to 2.9 per 100,000. Annual death rates attributed to alcoholism rose from 0.5 to 1.1 per 100,000 (Gallagher & Elwood, 1980). In New Zealand the rate of hospitalization for both men and women diagnosed with alcoholism or alcoholic psychosis has risen dramatically over the last few decades (see Appendix A, Table 4). However, hospital admissions for alcohol cirrhosis over a period of 20 years show an enormous increase in women which is not paralleled in men (see Appendix A, Table 5). This suggests that the incidence of alcoholism is rising faster in New Zealand women than in New Zealand men.

High rates for alcoholism in women have been reported in a number of other countries. In England the Merseyside Council on Alcoholism reported that the male/female ratio had changed within 10 years from 9:1 to 4 or 5:1. In Stockholm the number of women alcoholics has doubled in 10 years, while in New South Wales the male/female ratio of admissions to psychiatric centres remained at 5:1 between 1967 and 1974 (Sargent, 1979).

Dight (1976) in a survey of Scottish drinking habits, examined changes in parental drinking habits over four successive generations. She found that not only has there been a dramatic rise in the proportion of families where both parents drink (21% of first generation parents drank compared to 87% of present generation parents) but there has also been a huge increase in the number of mothers who drink. Twenty-four per cent of first generation mothers drank compared with 91% of present generation mothers.

Suggestions offered to explain this upward trend in female alcohol consumption and the rising incidence of alcoholism include: women are being singled out as targets for alcohol advertising; changing social norms; the acceptability of drinking in heterosexual groups; a growing recognition of the problem of alcoholism which makes it more acceptable for women to seek treatment; and the changing position of women in our society. With reference to the latter, problems with drinking have been found among women both trying to adopt the traditional female role and also those seeking a different role. However, there is evidence to suggest that alcohol problems tend to occur more often in women seeking greater social equality (Sargent, 1979). A 1976 Australian study examined the relationship between attitudes Australian women hold about the role

of women in our society and the rate of problem drinking. Results indicate that the more emancipated the role attitude i.e. the seeking of greater equality for women, the greater the drinking problem (Sargent, 1979).

In the U.S.A. Little et al (1976) found that many women report a decrease in alcohol consumption during pregnancy often citing adverse physiological effects as a reason for the decline. Even so, they found that 2 per cent of middle social class women were consuming at least 30 millilitres of absolute alcohol per day during pregnancy. Higher rates of consumption are reported for women in the lower social classes. In a study of poor, primarily non-white women in the U.S.A., 13 per cent were estimated to be drinking 80 millilitres of absolute alcohol per day (Rosset et al, 1978).

In the Christchurch Child Development Study, Ferguson et al (1979) found that during each trimester of pregnancy 887 (70%) women consumed on average, less than 15 millilitres of absolute alcohol per week. A further 246 (20%) averaged 15 to 45 millilitres of absolute alcohol per week; 99 (8%) more than 45 millilitres but fewer than 210 millilitres of absolute alcohol per week; and 16 (1%) averaged 30 millilitres or more of absolute alcohol per day.

Although the potential teratogenic effects of alcohol have been alluded to since early Greek and Roman times, it was not until the early 1970's that the relationship between pre-natal exposure to alcohol and birth defects drew serious scientific and medical attention. Since then intensive research on patterns and consequences of drinking during pregnancy has been undertaken (Little et al, 1980).

In many overseas studies involving large numbers of children affected by pre-natal exposure to alcohol, a wide spectrum of effects has been shown (Clarren and Smith, 1978). At the most severe end of the spectrum lie children with the unique constellation of anomalies termed Fetal Alcohol Syndrome (Streissguth et al, 1980). Along the rest of the continuum towards normal are children with every sub-combination of Fetal Alcohol Syndrome (FAS). The FAS consist of a variable number of the following developmental deficits: intra-uterine and post-natal growth deficiency; a characteristic facial appearance with short palpebral fissures, prominent forehead and jaw with poor development of the maxilla, squint, a short upturned nose and epicanthic folds; joint, limb and cardiac anomalies (Clarren and Smith, 1978); and behavioural/cognitive impairments such as fine motor dysfunction and mental retardation (Jones and Smith, 1973; and Streissguth, 1976).

Although the actual number of children born with FAS is not known, recent estimates place the number at one to two live births per thousand with partial expression occurring in three to five live births per thousand (Hanson et al, 1978). Even though increasing medical attention has been focussed on this disorder, these figures may underestimate the actual extent of the problem; the difficulty being that since not all the characteristics of the FAS are present in each case, the FAS often goes undiagnosed (Abel, 1980).

It has not yet been fully determined at what level alcohol begins to harm the foetus. As far as the physical features of FAS are concerned, Warren (1978) estimates the foetus is at risk when maternal consumption is approximately 90 millilitres of absolute alcohol or more per day. Contrary to this, an Australian research team reports that it has discovered evidence which suggests that one

large dose of alcohol in pregnancy could result in a child being born with FAS (Connexions, 1980). They claim their experimental findings and clinical observations lead them to believe that it is not chronic use of alcohol in pregnancy that causes FAS rather the acute effect of one large dose of alcohol.

The findings from several studies indicate that a lower maternal intake of between 30 and 60 millilitres of absolute alcohol per day may be important in disturbing foetal growth and producing low birth weight babies (Hanson et al, 1978; and Kaminski et al, 1978). Further, a recent study reports that drinking as little as twice per week, above a minimum amount of 30 millilitres of absolute alcohol is probably enough to endanger the foetus and possibly cause spontaneous abortion (Harlap and Shiona, 1980).

Dight (1976) examined the views people hold about the effects of both drinking and smoking on health. She found that in general, people's opinions as to which is the more harmful of the two seems to reflect an extension of their own behaviour. That is, those who smoke, but do not drink, tend to say that drinking is more harmful. Conversely, those who drink but do not smoke, say smoking is the more harmful. Among people who both smoke and drink, there is a tendency to state that smoking is the more damaging suggesting that people adopt an attitude consistent with their drinking behaviour. Moreover, the more alcohol they consume, the more likelihood that he/she is to assert that smoking is a greater threat. Among those who neither smoke nor drink, men tend to say that smoking is the more harmful, while women tend to say that drinking is the more detrimental to health.

Pharmacological Agents

The issuing of prescription drugs within New Zealand is currently rising (see Appendix A, Table 6). Unfortunately, the Chief Pharmacist of the Department of Health, Christchurch, advises there is no information currently available indicating for which sectors of the New Zealand population these drugs are being mainly prescribed. However, a health department survey carried out in 1971, found that on an average day in that year, 5 per cent of the New Zealand population took either a tranquillizer, an hypnotic,or both (Health, 1980). Among both sexes the reported daily use of hypnotics and tranquillizers was higher for married women (11.6%) than for any other sector of the population. Among unmarried women, 4.4% used one or both drugs per day.

Compared with the U.S.A., drug usage among New Zealand women is much lower than that found among U.S.A. women. In that country, an estimated 65% of women over the age of thirteen years regularly use either a major or a minor tranquillizer, and 46 per cent hypnotics or sedatives (Chambers and Hunt, 1977). It is difficult to estimate the extent of illicit drug usage among New Zealand women. However, the number of heroin users in New Zealand is estimated at between one and two thousand, of which one third (.02 of population) are women between the ages of eighteen and thirty years (Smith, 1974). This compares with an estimated 3 per cent of heroin users found among U.S.A. women over thirteen years of age (Chambers & Hunt, 1977).

The Chief Pharmacist of the Department of Health, Christchurch, advises there is no information available in New Zealand regarding the amount and type of drugs currently being prescribed for women during pregnancy. However, Fergusson et al (1979) found that at

some time during pregnancy; 264 (20.9%) women reported having been prescribed antibiotics, 68 (5.4%) prescribed tranquillizers, 115 (9.1%) prescribed sedatives, and 133 (10.5%) prescribed analgesics. Three hundred and eighty (30%) women reported occasionally taking non-prescribed asprin during their pregnancy, with a further 230 (18%) taking other non-prescribed drugs such as vitamins or fluoride tablets. Of the illicit non-prescribed drugs, 30 (2.4%) reported smoking cannabis, 6 (.5%) using L.S.D. or other hallucinogens, and 2 (.2%) using opiates at some stage during pregnancy.

The effect of a pharmacological agent on foetal development is contingent on the stage of embrogenesis at which drug exposure occurs. Generally drugs given during the first three months of pregnancy cause the most concern as this is the time all the major organs of the foetus become fully formed and when extreme sensitivity to teratogenic agents is found. The toxicity of drugs during the last six months of pregnancy is generally either an effect on growth or an effect on the new born, if significant blood levels are present at the time of delivery (Howard & Hill, 1979). The following account of drugs is not meant to be all inclusive, but it is a compilation of proven teratogens and of drugs which commonly are considered for use during pregnancy.

(a) Proven Teratogens

These included thalidomide, tetracycline, cancer chemotherapeutic agents, quinine, anti-convulsants, warfarin and cortisone (New Ethicals & Medical Progress, 1979).

(b) Hypnotics and Sedatives

Their possible teratogenic effects have been studied both prospectively and retrospectively, with conflicting results. Three

prospective studies found that librium and equinil increased the total incidence of congenital malformations by about three times, while valium was associated with an increase in the incidence of cleft lip and palate (Milkovich & Van der Berg, 1975; Safra & Oakley, 1975; Saxen, 1975). Conversely, a retrospective study in the U.S.A. and two smaller prospective studies showed no such relationship (Belafsky et al, 1969; Hartzet al, 1975; Kullander & Kallen, 1976).

(c) Narcotics

Maternal use of opiates during pregnancy affects both the foetus and newborn infant (Glass & Evans, 1977). Heroin and methadone cross the placenta and the foetus may become passively addicted. If the mother abruptly stops using the drug, or if there is a substantial decrease in dosage, foetal withdrawal may occur. After birth neo-natal abstinance syndrome is usually observed. Intra-uterine exposure is associated with decreased birth weight. This phenomenon is not observed after maternal use of methadone. Although neither drug is teratogenic in the human being, heroin has been observed to cause some chromosomal abnormalities in the newborn (Glass & Evans, 1977).

To date there is no convincing evidence of cannabis or cocaine induced teratogenicity, although there is at least one study on cannabis showing teratongeicity in rats (Persand & Ellington, 1968). Concerning L.S.D., there are no good clinical studies on its teratogenicity but teratogenic changes have been observed in experimental animals (Rementeria, 1977). Techmann-Duplessis (1975) suggests L.S.D. has the ability to cause chromosomal damage in the foetus. However, Dumars (1971) was unable to find increased chromosomal damage among forty-seven infants born to mothers using L.S.D.

(d) Asprin

Asprin is thought to be one of the most effective non-narcotic analgesics but it does have some adverse effects when used in the latter part of pregnancy (Collins & Turner, 1973). Foetal bleeding, prolonged gestation and increased maternal bleeding have all been found when it has been used chronically and in significant amounts (more than 3250 mgs per day).

This literature review has outlined the evidence that many types of drug use appear to be increasing at a higher rate among New Zealand women than among New Zealand men. This is critical because the majority of women using drugs (i.e. cigarettes, alcohol and pharmaceutic agents) fall within the normal child bearing ages. This present study is an exploratory investigation to determine pregnant mothers views about taking drugs during pregnancy and how aware they are of possible harmful intra-uterine effects. I shall now move on to outline the present research in more detail.

METHODOLOGY

This present study is an exploratory social survey based on the interviewing technique. An interview schedule of questions was designed to obtain the desired information, to establish a good rapport between the interviewer and pregnant mother, and to make the interview as comfortable as possible. There were two groups of subjects: a group of thirty pregnant mothers and a group of four medical doctors. A content analysis was performed on the information obtained from both groups of subjects.

(a) Subjects

The first group of subjects consisted of thirty pregnant mothers attending the ante natal clinic of the Christchurch Women's Hospital. The criteria for selection were that each mother must previously have given birth to a child and at the time of interview be at least three months pregnant. These criteria were chosen for two reasons. Firstly, it was thought that any mother having been through a previous pregnancy should have come into contact with some information concerning drug usage during pregnancy and possible intra-uterine effects. Sources for this information would include the following: the mother's general practitioner; the ante natal clinic nurses; friends or relatives; or other pregnant women. The mothers were divided into one of three relevant age groups. Group A consisted of mothers under twenty years of age, group B of mothers between twenty and thirty, and group C of mothers over thirty years of age. There were ten mothers per group and except for one mother who was a Western Samoan, all were born New Zealanders.

The second group of subjects consisted of four medical doctors.

One doctor was Consultant Obstetrician and Gynaecologist and another Registrar in Obstetrics and Gynaecology at the Christchurch Women's Hospital. The other two doctors were both general practitioners in Christchurch. Both had received at least six months postgraduate training in obstetrics.

(b) Apparatus and Materials

One tape cassette recorder for recording all interview sessions.

The 'Drugs and Pregnancy Interview Schedule' (see Appendix B) which consisted of twenty five questions, was used as a basis for interviewing all pregnant mothers. The interview schedule was designed with several aims in mind; (1) to obtain all the relevant demographic characteristics of the pregnant mother (2) to determine her views on drugs taken during pregnancy as well as the knowledge she has of harmful intra-uterine effects and (3) to make the interview as comfortable as possible for her, so as to prevent her feeling the knowledge she has on the topic was being critically tested. As such several buffer questions were included e.g. Do you have any preference for a boy or girl? Or how was your health during your last pregnancy?

(c) Procedure

The Head of the Obstetrical and Gynaecological Department at the Christchurch Women's Hospital was approached in regard to this exploratory study and permission sought to use mothers attending the ante-natal clinic of that hospital as subjects. After some discussion, permission was given to interview mothers willing to participate in the study. Because of the lack of space in the clinic itself, a small office was made available in the Obstetrics Department for interviewing.

The sister in charge of the clinic agreed to help in the study. Before each clinic began, she checked the medical records belonging to each mother expected that morning to see if she met the criteria. If this was so, upon arrival at the clinic, the mother was given details as to the purpose of this study by the sister and then asked if she would participate. There were no refusals. The mother was then brought up to the interview room and the interview proceeded.

All interviews took place on a face to face basis. Before asking the interview schedule of questions, a few minutes was taken by the interviewer to converse with the mother and answer any queries she may have had about the study. In all cases permission was sought by the interviewer to tape record the session.

After the thirty pregnant mothers had been interviewed, the four doctors were asked separately to reply to the following questions:

(1) What do you feel about maternal smoking during pregnancy?

(2) What knowledge do you have about the effects of smoking on the foetus?

(3) What do you feel about mothers who drink alcohol during pregnancy?

(4) What knowledge do you have about the effects of alcohol on the foetus?

(5) What do you feel about pharmacological agents taken during pregnancy?

(6) What knowledge do you have about their effects on the foetus?

Again permission was requested to tape record each interview session.

(d) Data Analysis

A content analysis as described by Babbie (1975) was carried out on the information obtained from both groups of subjects. All information was analysed in its entirity. This consisted of recording every statement made by a subject and then placing it into the appropriate pre-specified category. Only a general outline of categories used will be provided here as fuller details are contained in Appendix C. The analysis proceeded in two halves

The first half of the analysis consisted of recording the following information concerning the pregnant mothers.

(1) Demographic characteristics e.g. number of children
(2) Drug usage during pregnancy e.g. number of cigarettes smoked per day
(3) Preference for a boy or girl
(4) Health during present and last pregnancy
(5) Attendance at an ante natal class or parenthood class
(6) Information available at classes re drug usage during pregnancy
(7) Intends to breast feed
(8) Belongs to La Leche League
(9) Heard of Fetal Alcohol Syndrome
(10) Past and/or present occupation, and husband's occupation.

The second half of the analysis involved the information given by both groups of subjects. It consisted of recording every statement made by subjects regarding their views on maternal drug (i.e. alcohol, cigarettes, and pharmacological agents) usage during pregnancy. All statements were then placed into one of the following categories:

(1) Agree with drug usage

(2) Disagree with drug usage

(3) Physical effects

(4) Mental effects

(5) Non-specific effects

(6) Safe and unsafe drug limits

(7) No thoughts and/or knowledge on drug usage

(8) Example of a pharmacological drug effect

(9) Personal/family/friend's experience of drug usage

(10) Mother and foetus physical relationship

Not all categories were appropriate for each of the drug areas e.g. category eight would be inappropriate with alcohol or cigarettes.

RESULTS

In this section I shall present the results from both the first and second halves of the content analysis.

(a) First Half of the Analysis

Demographic Characteristics

Seven mothers in group A were unmarried and apart from one divorced mother in group C, all other mothers were married. The mean number of children per group was: 1 (group A), 1.5 (group B), and 1.9 (group C). (See Appendix D).

Drug Usage During Pregnancy

The majority of mothers in all three groups were taking some form of prescribed medication; usually a combination of iron, calcium and fluoride. Eight mothers from group A, six mothers from group B and eight mothers from group C fell into this category. With respect to non-prescribed drugs, two mothers from group A, four mothers from group B and six mothers from group C reported taking the occasional asprin or disprin during their pregnancies. No mother reported taking any non-prescribed illicit drug during pregnancy. Two mothers from group C reported they occasionally usedherbal drugs such as raspberry leaves (see Appendix E Table 1).

Reported weekly alcohol consumption was quite similar over the three groups. Six mothers from group A, four mothers from group B and five mothers from group C, said they did not consume alcohol during pregnancy. In both groups A and B, three mothers reported having between one and three drinks per week. Four mothers from group C reported the same. Finally, one mother from group A, three mothers from group B and one mother from group C, reported

having between four and ten drinks per week (see Appendix E Table 2).

Group A had the highest number of cigarette smokers with six mothers smoking an average of 14.16 cigarettes per day during pregnancy. Two mothers from this group reported smoking marijuana on at least one occasion per week. In group B, three mothers smoked an average of 10 cigarettes per day with the remainder of mothers smoking neither cigarettes nor marijuana. No mothers in group C smoked cigarettes or marijuana (see Appendix E Table 3).

Educational Qualifications

Overall, the mothers in group A have a lower educational standard than mothers in the other two groups; eight having no qualifications, one having School Certificate, and one having School Certificate and University Entrance. In groups B and C, five mothers have no educational qualifications, while the remaining mothers have School Certificate or above (see Appendix E Table 4).

Past and Present Occupation

In all three groups the majority of mothers are at present fulltime housewives or mothers. However, the most common past occupational category for group A was manual worker (9 mothers)' with one mother never having worked. In group B, two mothers were fully trained general nurses with the remaining mothers belonging to the clerical-secretarial and manual categories. In group C, there was one fully trained general nurse, one primary school teacher and an ex 4th year medical student. The remainder of mothers had worked in manual occupations (see Appendix E Table 5).

Husband's Occupation

In group C, the three husband's occupations are driver, post office clerk and labourer. In group B, the husband's occupations

fell into the clerical and manual categories. In group C, one mother was married to a professional man, one mother was divorced and the remaining mothers were married to manual workers (see Appendix E Table 6).

Breast Feeding and Membership of the La Leche League

In group A, five mothers intended to breast feed their babies, three mothers were undecided and two mothers did not want to breast feed. All ten mothers in group B intended to breast feed. In group C eight mothers intended to breast feed, one mother was undecided and one mother was against breast feeding. Only one mother, who was in group C belonged to the La Leche League (see Appendix D).

Ante-Natal/Parenthood Classes and Information re Drug Usage During Pregnancy

In group A, three mothers were attending classes. However, only one mother was given information about drug usage during pregnancy, this being on smoking. In group B, six mothers were attending classes but only one given any information, again on smoking. Finally, in group C three mothers were attending classes with two having received some information, again on smoking (see Appendix D).

Other Findings

In group A, five mothers expressed preference for a boy, one mother wanted a girl and the rest had no preference. In group B and C, two mothers expressed preference for a girl with the remaining eight mothers having no preference.

Reports of health during the last and present pregnancy in all groups ranged from 'not bad' to 'excellent'. Most complaints were of morning sickness or backache. No mothers had heard of FAS (see Appendix D).

(b) Second Half of the Analysis

Table 1 and Appendix F show the general trends exhibited by the three groups of mothers with regard to their views on pharmacological agents taken during pregnancy. Group A made forty-five responses, group B sixty-one responses, and group C sixty-four responses. Overall, two of the more important results are

(1) that pregnant mothers agree with taking prescribed medication during pregnancy and

(2) are against taking non-prescribed drugs, apart from the occasional asprin or disprin.

Over fifty per cent of each group are aware of possible physical and mental abnormalities resulting from drugs taken during pregnancy but only one mother (group C) mentioned the seriousness of taking drugs during early pregnancy. Overall, twenty-six responses were made expressing no thoughts and/or knowledge on pharmacological drug usage during pregnancy. An equal number of responses (26) were given as examples of specific pharmacological drug effects. Most of the examples given involved the outcomes of excessive asprin/disprin intake or heroin/marijuana use. Only four responses were made with respect to person/family/friend's experience of drug usage during pregnancy. Group C appear more aware of the importance of the mother/foetus physical relationship than the other two groups.

Table 2 and Appendix F show the general trends exhibited by the three groups of mothers with regard to cigarette smoking during pregnancy. Overall, fewer responses were made by each group than were for pharmacological agents. Only one mother (group A) agrees with smoking during pregnancy whilst four mothers from each group disagree with it. The most important finding is that many responses were made by each group showing that they are aware

TABLE 1

FREQUENCY OF RESPONSES MADE BY PREGNANT MOTHERS
WITH REGARD TO PHARMACOLOGICAL AGENTS TAKEN DURING PREGNANCY

CATEGORY	FREQUENCY		
	Group A	Group B	Group C
1. Agree with drug usage	4	6	8
2. Disagree with drug usage	7	9	6
3. Physical effects	9	6	7
4. Mental effects	6	6	7
5. Non-specific harmful effects	1	8	2
6. Safe and unsafe drug limits	Nil	6	6
7. No thoughts and/or knowledge on drug usage	7	7	12
8. Example of pharmacological drug effect	9	9	8
9. Personal/family/ friends experience of drug usage	1	1	2
10. Mother and foetus physical relationship	1	3	6
TOTALS	45	61	64

TABLE 2

FREQUENCY OF RESPONSES MADE BY PREGNANT MOTHERS
WITH REGARD TO THE SMOKING OF CIGARETTES DURING PREGNANCY

CATEGORY	FREQUENCY OF RESPONSE		
	Group A	Group B	Group C
1. Agree with drug usage	1		
2. Disagree with drug usage	4	4	4
3. Physical effects	12	21	18
4. Mental effects	2	4	2
5. Non-specific harmful effects	7	4	5
6. Safe and unsafe drug limits	4		
7. No thoughts and/or knowledge on drug usage	1	3	5
8. Example of pharmacological drug effect			
9. Personal/family/friend experience of drug usage	4	8	4
10. Mother and foetus physical relationship		8	9
TOTALS	35	52	47

of the possible physical effects of cigarettes on the foetus with groups B and C making twenty-one and eighteen responses respectively. Group A made twelve responses in this category. Overall, one mother (Group A) made reference to maternal smoking during pregnancy causing cancer in the foetus. As is seen in category five, non-specific harmful effects, subjects are aware of possible harmful effects but are unable to specify what these are. In comparison with pharmacological agents, fewer mothers had no thoughts and/or knowledge about cigarette smoking during pregnancy. In category nine, i.e. person/family/friends experience of drug usage, twice as many responses were given by group B (8) than by groups A and C (four each). No mother in group A mentioned the mother/foetus physical relationship, whereas eight and nine responses were given by groups B and C respectively.

Table 3 and Appendix F show the general trends exhibited by the three groups of pregnant mothers with regard to alcohol taken during pregnancy. Fewer responses were made in this drug area than in the other two areas. No mother in any of the three groups agrees with taking alcohol but on the other hand, only five responses were made against its use during pregnancy. Nine of the sixteen responses made about physical effects are concerned with heavy drinking whilst the remaining seven are concerned with alcohol in general. Four responses were given about possible mental effects. Twenty-three responses were given regarding alcohol harming the foetus in some non-specific way, with three mothers believing that alcohol is not as harmful as smoking to the foetus. The amount of alcohol intake considered as not harmful to the foetus ranged between 15 millilitres (1 response) and 30 millilitres (10 responses) per day.

TABLE 3

FREQUENCY OF RESPONSES MADE BY PREGNANT MOTHERS
WITH REGARD TO THE DRINKING OF ALCOHOL DURING PREGNANCY

CATEGORY	FREQUENCY		
	Group A	Group B	Group C
1. Agree with drug usage			
2. Disagree with drug usage	3	1	1
3. Physical effects	4	6	6
4. Mental effects	2	2	
5. Non-specific harmful effects	6	7	10
6. Safe and unsafe drug limits	4	4	4
7. No thoughts and/or knowledge on drug usage	6	5	6
8. Example of pharmacological drug effect			
9. Personal/family/friends experience of drug usage		7	4
10. Mother and foetus physical relationship	4	3	4
TOTALS	29	35	35

TABLE 4

FREQUENCY OF RESPONSES MADE BY FOUR DOCTORS
WITH REGARD TO CIGARETTES, ALCOHOL
AND PHARMACOLOGICAL AGENTS

CATEGORY	FREQUENCY		
	Cigarettes	Alcohol	Pharma-cological Agents
1. Agree with drug usage			4
2. Disagree with drug usage	4	3	3
3. Physical effects	13	14	7
4. Mental effects	1	4	
5. Non-specific effects			
6. Safe and unsafe drug limits	5	8	12
7. No thoughts and/or knowledge on drug usage	4	2	6
8. Example of pharmacological effect			21
9. Personal/family/friends experience of drug usage			
10. Mother and foetus physical relationship	1	3	3
TOTALS	28	34	56

In category nine, personal/family/ friend's experience, six mothers reported that drinking during pregnancy made them feel sick. Five mothers reported giving up or cutting down their alcohol intake for this reason. Overall, eleven references were made concerning the mother/foetus physical relationship.

Table 4 and Appendix F show the trends exhibited by the second group of subjects, four medical doctors, with regard to cigarettes, alcohol and pharmacological agents taken during pregnancy. Fifty-six responses were given concerning pharmacological agents and twenty-eight and thirty-four responses concerning cigarettes and alcohol respectively. All four doctors agree with the taking of prescribed medication during pregnancy and three were against the taking of non-prescribed and herbal drugs. All four doctors disagree with cigarette smoking during pregnancy and three prefer that mothers abstain from alcohol during pregnancy. A total of thirty-four references were made concerning the physical effects of the three types of drugs compared with only five being made about their mental effects. In category six, i.e. safe and unsafe drug limits, six alcoholic drinks (90 mls) are considered harmful by three doctors, but all four believe that two drinks (30 mls) per day is not harmful to the foetus. Three doctors believe that smoking over twenty cigarettes per day is harmful to the foetus while two think five or six cigarettes per day is permissible. Twelve responses were made in this category about pharmacological agents with emphasis being placed on the importance of not taking drugs during the early stages of pregnancy. All four doctors stated that we still do not know the long term effects of many drugs. I shall now move on to discuss these findings, suggesting how they compare with the relevant literature.

DISCUSSION

The content analysis performed in this study shows two major findings. Firstly, that there exists a distinct gap between the knowledge held by a group of pregnant mothers about harmful intro-uterine drug effects and of that held by medical doctors. Secondly, that within the three drug areas explored in this study, much less is known by pregnant mothers about the harmful effects of alcohol on the foetus than is known about cigarettes and pharmacological agents. The three drug areas will be discussed separately and will be mainly confined to the findings of the second half of the analysis.

Cigarettes

The many investigations into the deleterious consequences of maternal smoking in pregnancy have revealed associations between maternal smoking and intra-uterine growth regardation resulting in the following: low birth weight babies; increased neo-natal mortality; retarded post-natal growth; increased childhood pulmonary disorders; and mental retardation at seven and eleven years of age. An important trend shown in this study is the awareness of many pregnant mothers of the harmful physical and mental effects of smoking during pregnancy. In this study, twenty-four references were made concerning slower growth and low birth weight babies and a further twenty about the harmful effects of pre-natal and post-natal breathing. Even if mothers do not know the specific harmful effects they still show some awareness of smoking being harmful to the foetus. Of course it should be borne in mind that some mothers may have been purely guessing that maternal smoking is harmful to the foetus. Fewer statements were made with regard to mental effects. However

this is not too surprising as at present the literature is quite meagre on this aspect of maternal smoking. Only one reference about mental regardation was made by the group of doctors.

The present study shows that the self-reported prevalance of smoking during pregnancy is highest for the teenage mothers (group A) with a mean daily intake for six mothers being 14.16 cigarettes. This compared with a mean daily intake of 10 cigarettes for three mothers in group B. It is both significant and disturbing that sixty per cent of teenage mothers were smoking during their pregnancies, a figure which is twice that given for the teenage smokers in the general New Zealand female population. However, it must be stressed that the sample of teenagers used in this study was not a random sample from the New Zealand teenage population at large. It appears that although smokers in groups A and B in this study have some awareness of the adverse consequences of maternal smoking during pregnancy, this has had little impact on their smoking behaviour in the majority of cases.

The finding that only four mothers per group disagree with smoking during pregnancy is contrary to the views of the four doctors, who are unanimously opposed to it. One trend shown in this study and one which again is disturbing, is the non-awareness of the majority of mothers with regard to the medically presumed harmful and non-harmful daily limits of cigarette smoking. Overall, three mothers (group A) believe that it is permissible to smoke 25 cigarettes per day before harming the foetus compared with 20 cigarettes per day suggested by three of the doctors. One mother (group A) believes that smoking less than 10 cigarettes per day will not harm the foetus at all, an amount double that suggested by two doctors. So few

responses in this category could be explained by the lack of smokers in group C, and there being only three smokers in group B. This lack of smokers in group C could also explain why this group had five mothers saying they had no knowledge about smoking during pregnancy compared with one mother in group A and two mothers in group B. No doctor made reference to Everson's (1980) report that foetal exposure to maternal smoking may increase cancer risk in adult life. However, one mother (group A) stated that maternal smoking during pregnancy may cause cancer in the foetus.

Finally in this study cigarettes were excepted a possible teratogen on only six occasions on the basis of personal/family/friend's experience. Comments such as 'my mother smoked and we are all fine' (see Appendix F) appear to treat the medical contention that smoking retards physical and mental development as 'just another of those tales' or 'just another theory'.

Alcohol

Of all the three drug areas explored in this study, it is with alcohol that mothers have the least understanding of how it affects the foetus. However, it is stressed that the teratogenic effects of alcohol have only in the past seven or eight years been identified and so it is to be expected that public awareness of the risks of drinking during pregnancy will be limited. But bearing this in mind, it is still disturbing that no pregnant mothers had heard of Fetal Alcohol Syndrome before the interview, especially since the mothers included three fully trained general nurses and one ex fourth year medical student.

One important finding is that nineteen responses were made to the effect that alcohol or heavy drinking could harm the baby,

but of significance, is that these mothers have no idea how this could occur. Once again it is suggested that there is an element of guess-work involved here. Another factor which is disturbing is that ten mothers have no idea if alcohol can harm the foetus or not, with a further six reporting that have never thought about alcohol and pregnancy.

Concerning the physical and mental effects of alcohol on the foetus, only four responses were made about mental effects but these were in accordance with current literature and the views expressed by the four doctors. More, quite diverse responses, were made about the physical effects of alcohol on the foetus and were mainly in agreement with the current literature and the four doctors statements. Neither pregnant mothers nor doctors made reference to finding that small amounts of alcohol may cause spontaneous abortion in the mother but as this finding is still not fully proven this is not unexpected.

This study found that the reported drinking behaviour of mothers during pregnancy is very similar to that reported in the Christchurch Child Development Study. Overall, in both studies the reported amounts of alcohol consumed by mothers who were drinking during pregnancy were quite small. This study also found that five mothers had either reduced their alcohol intake or given up completely for the duration of their pregnancies. Of importance here, is that this was not because of any possible harm to their babies but because alcohol made them nauseous. This finding is in accordance with the findings of Little et al. (1978).

Finally, there was a slight trend across all three groups of mothers to be aware that alcohol does pass through the placental

barrier with four mothers believing that if the mother was an alcoholic the baby would be born drunk or perhaps in later life become an alcoholic itself.

Pharmacological Effects

As with cigarette smoking during pregnancy, a major trend shown in this drug area is the awareness of many mothers of the harmful physical and mental effects of pharmacological drugs taken during pregnancy. However, there was less of a tendency to name any specific harmful effect compared with cigarette smoking. A point of controversy arises here in that certain mothers responded that they were unaware of how drugs could harm the baby yet still went on to mention how drugs constitute a risk of physical abnormality and mental retardation. As with smoking and drinking it is suggested that once again an element of guesswork may be involved here.

One finding is that groups A and B appear to have a different idea regarding the amounts of drug responsible for causing physical or mental anomalies from group C. That is, group C mothers emphasised that it is heavy drug usage that causes anomalies whereas the other two groups believe drugs in general cause anomalies. The trend is for teenage mothers to refer to illegal non-prescribed drugs, usually heroin or marijuana, much more so than the other two groups of mothers. Groups B and C made much more reference to non-prescribed drugs such as asprin or disprin. This trend among teenage mothers may be due to there having been several fifteen and sixteen year old mothers in group A who, having recently left school, probably would have mixed in an environment where the taking of or discussing about such drugs is commonplace.

This study shows that pregnant mothers are able to give examples

of specific pharmacological drugs and their harmful effects, although to a much more limited degree than the four doctors. One important finding is that the majority of responses given by mothers were almost exclusively confined to asprin/disprin intake, and marijuana and heroin use. The supposed harmful effects of these four drugs were quite diverse in nature and of importance here is that they were almost all contrary to current literature. But it must be stressed that the long term effects of many drugs have not yet been established and there is still controversy amongst doctors as to the teratogenic effects of some drugs. No mention was made of any other over-the-counter drugs such as codis, panadol or codein throughout the section on pharmacological drugs.

As with cigarette smoking during pregnancy, there appears a lack of awareness amongst mothers of the importance of safe and unsafe drug limits, and it is disturbing that so few mothers made reference to the first trimester of pregnancy being especially sensitive to teratogenic agents.

The reported drug usage of prescribed medication in this present study was quite different from that reported in the Christchurch Child Development Study. Apart from iron, calcium, and fluoride tablets, very few mothers in this study were taking any other form of prescribed medication. This contrasts with the Christchurch Child Development Study where many pregnant women were taking some form of prescribed medication at some stage during their pregnancy. With regard to non-prescribed drugs, reported drug usage during pregnancy was similar in both studies.

Concerning the views of mothers about drug usage during pregnancy, seventeen responses were made agreeing with the taking

of prescribed medication, but twenty-two were made disagreeing with some form or another of drug usage during pregnancy. Related to this and which is disturbing, is that seven mothers stated that they have never thought seriously about drugs and pregnancy with a further seven stating they just do not know if drugs can harm a baby or not.

Finally it does appear that a pregnant mother's view on the taking of drugs during pregnancy does tend to concur with her reported drug taking behaviour during pregnancy.

CONCLUSION

As a study exploring the views and knowledge pregnant mothers have about drug usage during pregnancy, several conclusions have been reached.

It appears from this study that pregnant mothers have very little knowledge about the harmful intra-uterine effects caused by cigarettes and pharmacological agents, and even less knowledge of the harmful effects of alcohol on the foetus. Even when mothers do have some knowledge, in many instances it is contrary to current medical and scientific opinion.

It also appears that ante-natal and parenthood classes are giving out only minimal information to expectant mothers concerning drug effects on the foetus. When information is given, it appears to be exclusively concerned with smoking during pregnancy and its deleterious consequences.

However, as this study is purely an exploratory study, it is suggested that much more research into this whole area is needed to clarify these issues and obtain representative material.

BIBLIOGRAPHY

ABEL, E. L. Fetal alcohol syndrome; behavioural teratology. Psychological Bulletin, 87 (1): 29-50, 1980.

ALCOHOLIC LIQUOR ADVISORY COUNCIL, WELLINGTON. Personal communication with librarian. Alcoholic Liquor Advisory Council, Wellington, 1980.

BABBIE, E. R. The practice of social research. Belmont, California, Wadsworth, 1975.

BARIC, L. and MacARTHUR, C. Health norms in pregnancy. British Journal of Preventative and Social Medicine, 31: 30-38, 1977.

BELAFSKY, H. A., HIRSCH, L. M., SHANGOLD, J. E. and STAHL, M. B. Meprobamate during pregnancy. Obstetrics and Gynaecology, 34: 378-396, 1968.

BUTLER, N. R. and GOLDSTEIN, H. Smoking in pregnancy and subsequent child development. British Medical Journal, 4: 573-575, 1973.

CAPELL, P. J. Trends in cigarette smoking in the United Kingdom. Health Trends, 8: 14-25, 1978.

CASWELL, S. Drinking by New Zealanders. Report from the Alcoholic Liquor Advisory Council, Wellington, 1980.

CHAMBERS, C. D. and HUNT, L. G. Drug use patterns in pregnant women. In Rementeria, J. L. (Ed.). Drug abuse in pregnancy and neonatal effects. St Louis, C. B. Mosby Co., 1977.

CLARREN, S. K. and SMITH, D. W. The fetal alcohol syndrome. New England Journal of Medicine, 298: 1063-1067, 1978.

COLLINS, E. and TURNER, G. Six children affected by maternal alcoholism. Medical Journal of Australia, 2: 606-608, 1978.

CONNEXIONS. Report by New South Wales Drug and Alcohol Authority, July, 1980.

DIGHT, E. Scottish drinking habits. London, Her Majesty's Stationary Office, 1976.

DUMARS, K. W. Parental drug usage: effects upon chromosomes of progeny. Paediatrics, 47: 1037-1041, 1971.

EVERSON, R. B. Individuals transplacentally exposed to maternal smoking maybe at increased cancer risk in adult life. Lancet, 2: 123-127, 1980.

FERGUSSON, D. M. Personal communication re the pharmaceutical agents taken during pregnancy by women involved in the Christchurch Child Development Study, 1979.

FERGUSSON, D. M., HORWOOD, L. J. and SHANNON, F. T. Smoking during pregnancy. New Zealand Medical Journal, 89: 41-43, 1979.

FERGUSSON, D. M., HORWOOD, L. J. and SHANNON, F. T. Alcohol consumption during pregnancy. Report from the Christchurch Child Development Study, Christchurch, 1979.

GALLAGHER, R. P. and ELLWOOD, J. M. Increases in alcohol related mortality in Canada, 1965-1977. Lancet, I, p. 775, 1980.

GLASS, L. and EVANS, H. E. Physiological effects of intra-uterine exposure to narcotics. In, Rementeria, J. L. (Ed.) Drug abuse in pregnancy and neo-natal effects. St Louis, C. V. Mosby Co., 1977.

GOLDSTEIN, H. Smoking in pregnancy: some notes on the statistical controversy. British Journal of Preventative and Social Medicine, 31: 13-71, 1977.

GRAHAM, H. Smoking in pregnancy: the attitudes of expectant mothers, Social Science and Medicine, 10: 399-405, 1976.

HANSON, J. W., STREISSGUTH, A. P. and SMITH, D. W. The effects of moderate alcohol consumption during pregnancy on foetal growth and morphogenesis. Journal of Paediatrics, 92: 457-460, 1978.

HARLAP, S. and SHIONO, P. H. Alcohol, smoking and incidence of spontaneous abortion in the first and second trimester. Lancet, 2: 173-176, 1980.

HARTZ, S. C., HEINONEN, O. P., SHAPIRO, S., SISKIND, V., and SLONE, D. Ante-natal exposures to meprobamate and chlordiazepoxide in relation to malformations, mental development, and childhood mortality. New England Journal of Medicine, 292: 726-728, 1975.

HAY, D. R. Smoking in pregnancy. Notes on address to the United Nations Association, Christchurch, July 1979.

HEALEY, P. Patterns of drug use in Australia. Australian Journal of Alcohol and Drug Dependence, 6: 30-103, 1979.

HEALTH. Smoking and women. Health, 328 (1): 11-12, 1980.

HEALTH DEPARTMENT, Christchurch. Personal communication with Chief Pharmacist re changes in the issuing of prescription drugs within New Zealand, 1980.

HOWARD, F. M. and HILL, J. M. Drugs in pregnancy. Obstetrical and Gynaecological Survey, 34: 643-653, 1979.

JONES, K. L. and SMITH, D. W. Recognition of the fetal alcohol syndrome in early infancy. Lancet, 2: 999-1001, 1973.

KAMINSKI, M., RUMEAU, C. and SCHWARTZ, D. Alcohol consumption in pregnant women and the outcome of pregnancy. Alcoholism: Clinical and Experimental Research, 2: 155-164, 1978.

KULLANDER, S. and KALLEN, B. A prospective study of smoking and pregnancy. ACTA OBSTETRICA ET GYNECOLOGICA, SCANDINAVIA, 55: 25-33, 1976.

LITTLE, R. E., STREISSGUTH, A. P. and GUZINSKI, G. M. Prevention of fetal alcohol syndrome. Alcoholism: Clinical and Experimental Research, 4 (2): 185-189, 1980

LITTLE, R. E., SCHULTZ, F. A. and MANDELL, W. Drinking during pregnancy. Journal of Studies on Alcohol, 37 (2): 373-379, 1976.

MEREDITH, H. V. Relation between tobacco smoking of pregnant women and baby size of their progeny: a compilation and synthesis of published studies. Human Biology, 47: 451-472, 1975.

MEYER, M. B. and TONASCIA, J. A. Maternal smoking, pregnancy complications, and perinatal mortality. American Journal of Obstetrics and Gynaecology, 128: 494-502, 1977.

MILKOVICH, L. and van der BERG, B. J. Effects of ante-natal exposure to anoretic drugs. American Journal of Obstetrics and Gynaecology, 291: 1268-1271, 1974.

NEW ETHICALS AND MEDICAL PROGRESS. Maternal drug ingestion and neo-natal effect. Table I, p. 118, Feb. 1979.

O'HAGEN, J. J. The influence of alcohol and other drugs on the developing foetus and infant. Summary of address given to United Nations Association, Christchurch, July 1979.

PERSAND, T.V.N. and ELLINGTON, A. C. Teratogenic activity of cannabis resin. Lancet, 2: 406, 1968.

RAY, O. Drugs, society and human behaviour. St Louis, C. V. Mosby Co., 1978.

REMENTERIA, J. L. (Ed.) Drug abuse in pregnancy and neo-natal effects. St Louis, C. V. Mosby Co., 1977.

ROSETT, H. L., WEINER, L., ZUCKERMAN, B., McKINLAY, S. and EDELINE, K. Reduction of alcohol consumption during pregnancy with benefits to the newborn. Alcoholism: Clinical and Experimental Research, 4 (2): 178-184, 1980.

SAFRA, M. J. and OAKLEY, G. P. Association between cleft lip with or without cleft palate and pre-natal exposure to diazepam. Lancet, 3: 478-480, 1975.

SARGENT, M. Drinking and alcoholism in Australia: a power relations theory. Melbourne, Longman Cheshire, 1979.

SAXEN, I. Associations between oral clefts and drugs taken during pregnancy. International Journal of Epidemiology, 4: 37-44, 1975.

SMITH, B. Methadone maintenance programme: philosophy, assessment and procedure. Paper presented to New Zealand Psychological Conference, August 1979.

STACEY, B. G. and ABSOLOM, I. Social aspects of alcohol consumption in New Zealand. Report of the Alcoholic Liquor Advisory Council, Wellington, 1980.

STREISSGUTH, A. Psychological handicaps in children with fetal alcohol syndrome. Annals of New York Academy of Sciences, 273 (6): 140-145, 1976.

STREISSGUTH, A., BARR, H. M., MARTIN, D. C. and HERMAN, C. S. Effects of maternal alcohol, nicotine and caffeine use during pregnancy of infant mental and motor development at eight months. Alcoholism: Clinical and Experimental Research, 4 (2): 152-164, 1980.

TECHMANN-DUPLESSIS, H. Drug effects on the fetus. Massachusetts, Publishing Sciences Group Inc., 1975.

TRENDS: HEALTH AND HEALTH SERVICES. Department of Health Publication, 1979.

UNITED STATES SURGEON GENERAL. Report on smoking and health. United States Public Health Service, 1979.

WARREN, K. R. Critical review of fetal alcohol syndrome. Paper presented at press conference of the National Institute on Alcohol Abuse and Alcoholism, Washington, 1978.

WORLD HEALTH. Women and smoking. 2: 23-25, 1980.

APPENDIX A

TABLE 1

ESTIMATED CONSUMPTION OF TOBACCO AND CIGARETTES IN NEW ZEALAND

YEAR	TOBACCO KG(000)	CIGARETTES (000,000)
1972	933	5405
1973	856	5525
1974	785	5771
1975	750	6230
1976	702	6231
1977	668	6345

Source: Trends: Health and Health Services, 1979. Department of Health Publication.

TABLE 2

ESTIMATED CONSUMPTION OF ABSOLUTE ALCOHOL
PER HEAD OF POPULATION IN NEW ZEALAND (LITRES)

YEAR	BEER	WINE	SPIRITS	TOTAL
1955	3.956	0.272	1.218	5.446
1956	4.008	0.224	1.260	5.492
1957	4.144	0.240	1.092	5.476
1958	3.836	0.304	0.882	5.022
1959	3.588	0.304	0.840	4.732
1960	3.996	0.336	1.008	5.340
1961	4.000	0.320	1.050	5.370
1962	4.132	0.336	0.966	5.434
1963	4.048	0.368	1.050	5.466
1964	4.080	0.416	1.176	5.672
1965	4.160	0.448	1.218	5.826
1966	4.296	0.512	1.176	5.984
1967	4.408	0.592	1.134	6.134
1968	4.424	0.672	0.966	6.062
1969	4.452	0.784	1.008	6.244
1970	4.672	0.891	1.050	6.613
1971	4.852	1.047	1.134	7.033
1972	4.844	1.132	1.218	7.194
1973	5.008	1.288	1.470	7.766
1974	5.044	1.319	1.638	8.001
1975	5.356	1.230	1.764	8.350
1976	5.164	1.358	1.974	8.496
1977	5.252	1.442	1.974	8.752
* 1979	4.74	1.58	2.21	8.43

SOURCE: Personal communication with librarian, Alcoholic Liquor Advisory Board, Wellington. (*1978 not obtained)

TABLE 3

PERCENTAGE OF RESPONDENTS IN EACH DRINKING INTENSITY CATEGORY BY OWN ESTIMATE OF FREQUENCY OF DRINKING IN A TYPICAL WEEK

Drinking Intensity (Mls of absolute alcohol)	Own Estimate of Frequency of Drinking in a typical week	Men %	Women %
0 - 20 mls	5 or more times/week	7	5
	3-4 times/week	14	9
	1-2 times/week	30	21
	Don't drink in a typical week	50	66
21 - 40 mls	5 or more times/week	32	29
	3-4 times/week	28	25
	1-2 times/week	29	23
	Don't drink in a typical week	12	23
41 - 60 mls	5 or more times/week	41	40
	3-4 times/week	31	19
	1-2 times/week	23	24
	Don't drink in a typical week	5	17
61 - 100 mls	5 or more times/week	48	46
	3-4 times/week	28	21
	1-2 times/week	17	18
	Don't drink in a typical week	5	15
100 mls +	5 or mores times/week	45	45
	3-4 times/week	32	22
	1-2 times/week	17	18
	Don't drink in a typical week	5	16
All drinkers	5 or more times/week	18	10
	3-4 times/week	19	11
	1-2 times/week	27	21
	Don't drink in a typical week	35	58

Source: Drinking by New Zealanders - Publication by the Alcoholic Liquor Advisory Council, 1980

TABLE 4

RATES OF HOSPITALIZATION IN PSYCHIATRIC HOSPITALS (PER 100,000 POPULATION) IN NEW ZEALAND: DIAGNOSIS ALCOHOLISM, ALCOHOLIC PSYCHOSIS

YEAR	Females	Males
1955	2.0	10.5
1959	2.0	19.5
1963	8.0	41.8
1971	16.7	116.3
1974	25.6	139.6

Source: Trends: Health and Health Services, 1979, Department of Health Publication

TABLE 5

RATES OF HOSPITALIZATION IN PUBLIC HOSPITALS (PER 100,000 POPULATION) IN NEW ZEALAND: DIAGNOSIS CIRRHOSIS OF THE LIVER WITH ALCOHOLISM

YEAR	Females	Males
1955	0.1	1.9
1959	0.5	0.9
1963	0.6	3.6
1971	2.9	11.7
1974	4.3	14.2

Source: Trends: Health and Health Services, 1979. Department of Health Publication.

TABLE 6

CHANGES IN THE ISSUING OF PRESCRIPTION DRUGS IN NEW ZEALAND
(DRUGS ACTING ON THE CENTRAL NERVOUS SYSTEM ONLY)

DRUG	NUMBER OF PRESCRIPTIONS (;000)		
	1977-78	1978-79	1979-80*
Analgesics	2372	2415	2791
Antidepressants	645	620	587
Barbiturates	234	198	166
Hypnotics	595	616	566
Tranquillizers	1446	1396	1203
TOTAL	5292	5245	5313

* year ends at 31 March

Source: Personal Communication by Chief Pharmacist, Department of Health, Christchurch

APPENDIX B

DRUGS AND PREGNANCY INTERVIEW SCHEDULE

In which of these age groups are you?

under 20
between 20 and 30
over 30

Do you have any educational qualifications?

no formal educational certificates,
School Certificate, University Entrance
tertiary education, specialised or further training

When is your baby expected?

Do you have any other children?

Do you have any preference for a boy or girl this time?

What did you work as before having your present baby?

What does your husband do for a living?

How was your health during your last pregnancy?

How is your health during this pregnancy? Any backaches, headaches, etc.

Are you taking any medication prescribed either from your G.P. or from the hospital clinic, or anybody else?

Do you ever take any medication such as disprin or asprin, codeine etc. which you can buy from a chemist shop or other shop?

Do you ever take any medication during pregnancy which perhaps a family member has told you about?

In general, what do you think about taking drugs during pregnancy?

Do you intend to breast feed your baby?

Do you belong to the La Leche League of mothers or any other group which stress breast feeding?

Do you smoke at all? How many cigarettes per day do you smoke at present?

Do you smoke marijuana?

What do you think about smoking during pregnancy?

What about drinking alcohol? How much alcohol do you drink at present?

In general what do you think about drinking alcohol during pregnancy?

Have you ever heard of the Fetal Alcohol Syndrome?

Do you attend any ante-natal classes or parenthood classes?

If so, are you given any information concerning drug usage during pregnancy?

APPENDIX C

The features of each category included in the content analysis, including examples, are set out below.

(1)	AGREE WITH DRUG USAGE	-	prescribed medication, occasional asprin or disprin, etc.
(2)	DISAGREE WITH DRUG USAGE	-	non-prescribed medication, illegal drugs, drugs in general.
(3)	PHYSICAL EFFECTS	-	low birth weight, physical abnormalities, etc.
(4)	MENTAL EFFECTS	-	brain damage, mental retardation.
(5)	NON-SPECIFIC HARMFUL EFFECTS	-	harmful to baby, could make baby sick, etc.
(6)	SAFE AND UNSAFE DRUG LIMITS	-	number of cigarettes per day, drinks per day, mention of first trimester, etc.
(7)	NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE	-	never thought about drugs and pregnancy, don't know how they could harm a baby, etc.
(8)	EXAMPLES OF PHARMACOLOGICAL DRUG EFFECTS	-	asprin causes kidney damage, thalidomide cause abnormalities, etc.
(9)	PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE	-	blame miscarriage on taking tablets, had small babies and did not smoke, drinking makes me feel sick, etc.
(10)	MOTHER AND FOETUS PHYSICAL RELATIONSHIP	-	drugs pass through the placental barrier, etc.

APPENDIX D

RAW DATA - PREGNANT MOTHERS

	Group A	Group B	Group C
Single	7		
Married	3	10	
Divorced			1
Children per group	10	15	19
Intend to breast feed	5	10	8
Do not intend to breast feed	2		1
Undecided about breast feeding	3		1
Belongs to la Leche League			1
Attends ante-natal/parehthood classes	3	6	3
Given information re drug usage	1(s)*	1(s)*	2(s)*
Prefer a boy	5		
Prefer a girl	1	2	2
No preference for boy/girl	4	8	8
Heard of FAS	--	--	--
Health during present pregnancy - not bad	3	0	3
Health during present pregnancy - good	7	8	5
Health during present pregnancy - excellent	0	2	2
Health during past pregnancy - not bad	2	1	
Health during past pregnancy - good	8	7	6
Health during past pregnancy - excellent	0	2	4

*Smoking during pregnancy

APPENDIX E

TABLE 1

PHARMACOLOGICAL DRUGS TAKEN DURING PREGNANCY

Type of Drug		Group A	Group B	Group C
Prescribed medication		8	6	8
Non-prescribed licit drugs		2	4	6
Non-prescribed illicit drugs				
Herbal drugs				2
TOTAL	n = 34*	10	10	16

* more than one response given

TABLE 2

ALCOHOL CONSUMPTION DURING PREGNANCY

Number of drinks per week		Group A	Group B	Group C
Do not drink		6	4	5
1-3		3	3	4
4-10		1	3	1
TOTAL	n = 30	10	10	10

TABLE 3

CIGARETTE SMOKING DURING PREGNANCY

Number of cigarettes smoked per day		Group A	Group B	Group C
Do not smoke		4	7	10
1-9			2	
10-14		4		
15-20		1	1	
21 and above		1		
TOTAL	n = 30	10	10	10

TABLE 4

EDUCATIONAL LEVEL

Level of attainment	Group A	Group B	Group C
No educational qualification	8	5	5
School Certificate	1	2	2
University Entrance	1	3	3
TOTAL n = 30	10	10	10

TABLE 5

PAST AND/OR PRESENT OCCUPATION

Type of Occupation	Group A	Group B	Group C
Manual	9	3	7
Clerical-secretarial		5	
Nurse		2	1
Teacher			1
Other professional			1#
Never worked	1		
TOTAL n = 30	10	10	10

ex 4th year medical student

TABLE 6

HUSBAND'S OCCUPATION

Type of Occupation	Group A	Group B	Group C
Manual	2	7	8
Clerical	1	3	
Professional			1
TOTAL n = 22	3	10	9

APPENDIX F

SUMMARY AND FREQUENCY OF STATEMENTS MADE BY PREGNANT SUBJECTS WITH REGARD TO CIGARETTE SMOKING DURING PREGNANCY

AGREE WITH DRUG USAGE

Group 1 It is alright to smoke during pregnancy (1)
Group 2 Nil
Group 3 Nil

DISAGREE WITH DRUG USAGE

Group 1 Against smoking during pregnancy (4)
Group 2 Against smoking during pregnancy (4)
Group 3 Against smoking during pregnancy (4)

PHYSICAL EFFECTS

Group 1
- Causes cancer in the foetus (1)
- Children of heavy smokers have lots of childhood illnesses (1)
- Causes smaller babies (5)
- Harms lungs and breathing (2)
- Babies can later develop asthma (1)
- Baby's breathing stops for a second when the mother puffs a cigarette (2)

Group 2
- Causes slower growth (4)
- Causes smaller babies (6)
- Baby's breathing stops for a second when the mother puffs a cigarette (4)
- Harms a baby's breathing (4)
- Could physically deform a baby (1)
- Heavy smoking can cause withdrawal symptoms (2)

Group 3
- Causes smaller babies (6)
- Smoking could be hereditary (1)
- Harms the baby's breathing (6)
- Babies are born with lower birth weights (2)
- May cause later lung and bronchial trouble (1)
- Slows growth before and after birth (1)
- Baby's breathing stops for a second when the mother puffs a cigarette (1)

MENTAL EFFECTS

Group 1 Children of heavy smokers are slower at school (2)
Group 2 Lessens later mental ability (3)
Affects the baby's personality (1)
Group 3 Could be mentally retarded (2)

NON-SPECIFIC HARMFUL EFFECTS

Group 1 Smoking harms the foetus (5)
Harms the baby but don't know how (2)
Group 2 Nicotine must harm the baby's system some way (2)
Smoking must affect the baby in some way (2)
Group 3 Smoking harm the foetus (5)

SAFE AND UNSAFE DRUG LIMITS

Group 1 Less than 10 cigarettes per day won't harm the baby (1)
About 25 cigarettes a day would harm the baby (3)
Group 2 Nil
Group 3 Nil

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Group 1 No idea if smoking harms a baby (1)
Group 2 Don't know if smoking is bad for a baby or not (2)
Don't know how many cigarettes are needed to harm a baby (1)
Group 3 Don't know if smoking harms the foetus or not as I don't smoke (4)
Don't know about smoking during pregnancy (1)

EXAMPLE OF PHARMACOLOGICAL DRUG EFFECTS

Not applicable

PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE

Group 1 Cut down since being pregnant as it makes me sick (4)
Group 2 I have smoked in all my pregnancies and my babies are healthy (1)
I smoke but know I shouldn't (1)
Have friends who smoke and their babies are fine (1)
Saw a film on smoking during pregnancy and its harmful effects (5)
Group 3 My mother smoked and we are all fine (3)
I had 2 very small babies and I didn't smoke (1)

MOTHER AND FOETUS PHYSICAL RELATIONSHIP

Group 1 Nil
Group 2 If smoking affects the mother it must affect the baby (3)
Babies of mother who smoke are not as healthy as those of mothers who don't smoke (1)
Smoking tires me out so it must tire out my baby (1)
When the mother puffs a cigarette it must make the baby feel dizzy (1)
As the mother has a smoke so does the baby (2)
Group 3 No good for mother therefore no good for the baby (3)
If the mother smokes the baby must smoke at the same time (1)
Nicotine going through the placenta must harm the child (1)
Carbon monoxide is going into the mother's system therefore is also going into the baby's (1)
When the mother smokes so does the baby (3)

SUMMARY AND FREQUENCY OF STATEMENTS MADE BY PREGNANT SUBJECTS WITH REGARD TO ALCOHOL TAKEN DURING PREGNANCY

AGREE WITH DRUG USE

Group 1 Nil
Group 2 Nil
Group 3 Nil

DISAGREE WITH DRUG USAGE

Group 1 Against drinking alcohol during pregnancy (3)
Group 2 Pregnant women should not get drunk (1)
Group 3 Against drinking in pregnancy (1)

PHYSICAL EFFECTS

Group 1 Heavy drinking can physically deform a baby (2)
If mother is drunk she could fall over and hurt the baby (2)
Group 2 Heavy drinking could cause an alcoholic looking baby (1)
Heavy drinking could physically harm the child (1)
Alcohol will slow the growth of the baby (3)
Could cause diabetes in the foetus (1)
Group 3 Will slow down growth (3)
Excessive drinking could lead the baby to becoming an alcoholic (2)
Heavy drinking could cause physical deformities (1)

MENTAL EFFECTS

Group 1 Heavy drinking could mentally deform the baby (2)
Group 2 Heavy drinking would cause brain damage (1)
Heavy drinking could cause mental retardation (1)
Group 3 Nil

NON-SPECIFIC HARMFUL EFFECTS

Group 1 Alcohol could harm the baby but don't know how (5)
Heavy drinking could harm the baby but I don't know how (1)
Group 2 Heavy drinking could affect the child but don't know how (3)
Alcohol is not as harmful as smoking (3)
Could cause the same effects as smoking but don't really know (1)
Group 3 Excessive drinking could harm the baby but don't know how (4)
Think alcohol could harm the baby but don't know how (6)

SAFE AND UNSAFE DRUG LIMITS

Group 1 About two drinks a day won't harm the baby (4)
Group 2 Drinking during the first three months might affect growth (1)
Drinking a couple of drinks a day is alright (3)
Group 3 A couple of drinks a day is alright (3)
A glass of wine per day is not harmful (1)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Group 1 Don't know if alcohol harms the foetus or not (6)
Group 2 Never thought about alcohol during pregnancy (1)
Don't know if it would affect a baby or not (2)
Haven't read or heard how alcohol affects a baby (1)
We don't know how alcohol affects a child (1)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Group 3 Don't know any way alcohol could harm a baby (1)
Never seriously thought about it (4)
Never thought about it and don't intend to (1)

EXAMPLE OF PHARMACOLOGICAL DRUG EFFECT

Not applicable

PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE

Group 1 Nil
Group 2 Drinking during pregnancy makes me feel sick (3)
Given up since being pregnant because I feel sick (3)
Drink less since being pregnant as it makes me feel sick (1)
Group 3 Drinking during pregnancy makes me feel sick (3)
Cut down since being pregnant as it makes me sick (1)

MOTHER AND FOETUS PHYSICAL RELATIONSHIP

Group 1 If mother is an alcoholic the baby could be born drunk (4)
Group 2 If alcohol affects the mother it must affect the child (2)
Heavy drinking would harm the mother more than the baby (1)
Group 3 What the mother drinks the baby drinks as well (1)
What's in the mother's system goes into the baby's system (3)

SUMMARY AND FREQUENCY OF STATEMENTS MADE BY PREGNANT SUBJECTS WITH REGARD TO PHARMACOLOGICAL AGENTS TAKEN DURING PREGNANCY

AGREE WITH DRUG USE

Group 1 Agree with prescribed medication (4)
Group 2 Agree with prescribed medication (6)
Group 3 Agree with taking drugs during pregnancy (1)
Agree with prescribed medication (7)

DISAGREE WITH DRUG USAGE

Group 1 Against taking non-prescribed medication (7)
Group 2 Against taking drugs during pregnancy (4)
Against taking drugs for the sake of taking drugs (2)
Against taking herbal drugs (3)
Group 3 Disagree with taking drugs during pregnancy (4)
Disagree with non-prescribed medication (2)

PHYSICAL EFFECTS

Group 1 Hard drugs could physically harm the baby (3)
Drugs can physically deform the baby (5)
Drugs can cause small babies (1)
Group 2 Drugs cause a risk of physical deformities (5)
Could affect child's later growth (1)
Group 3 Heavy drug taking could cause physical deformities (7)

MENTAL EFFECTS

Group 1 Hard drugs could mentally harm the baby (2)
Any drug can mentally harm a baby (4)
Group 2 Drugs cause a risk of mental retardation (5)
Drugs could affect a child's later mental ability (1)
Group 3 Heavy drug taking causes mental retardation (7)

NON-SPECIFIC HARMFUL EFFECTS

Group 1 Drugs taken regularly harm the baby (1)
Group 2 Drugs could harm the baby (8)
Group 3 Drugs could harm the baby (2)

SAFE AND UNSAFE DRUG LIMITS

Group 1 Nil
Group 2 Drugs taken at the start of pregnancy would scare me (3)
Occasional asprin/disprin won't harm the baby (3)
Group 3 Occasional asprin/disprin won't harm the baby (3)
Would worry if I had taken drugs in early pregnancy (3)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Group 1 Never thought seriously about it (4)
Never read or been told about it (1)
Don't know about drugs like heroin (1)
Don't know how drugs could affect a baby (1)
Group 2 Don't know if drugs can harm the baby (7)
Group 3 Never thought seriously about it (3)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Group 3
- Don't know how drugs would harm a baby (4)
- Don't know about herbal medicines (2)
- Don't know how marijuana can harm a baby (3)

EXAMPLES OF PHARMACOLOGICAL DRUG EFFECT

Group 1
- Excessive asprin/disprin could harm the baby (2)
- Excessive asprin slows down foetal heart rate (1)
- Excessive asprin could physically deform a baby (1)
- Marijuana won't harm the baby (1)
- Marijuana causes deformities in a baby (1)
- Marijuana could harm the baby (1)
- Babies of heroin addicts could be born addicted (1)
- Babies of heroin addicts can die before birth (1)

Group 2
- Excessive asprin/disprin could cause brain damage (1)
- Excessive asprin/disprin could cause kidney damage (2)
- Excessive asprin/disprin must affect the baby somehow (1)
- Tranquillizers can make a baby slow and relaxed (1)
- Asprin/disprin won't deform a baby (1)
- Mention of thalidomide abnormalities (3)

Group 3
- High doses of asprin are harmful (1)
- Mention of thalidomide abnormalities (5)
- Marijuana could harm a baby (1)
- Marijuana could kill a baby (1)

PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE

Group 1
- Friend took sleeping tablets and lost baby (1)

Group 2
- Sister took tranquillizers and had a miscarriage (1)

Group 3
- Know someone who lost a baby in pregnancy after taking drugs (2)

MOTHER AND FOETUS PHYSICAL RELATIONSHIP

Group 1
- What a mother takes passes through to the baby (1)

Group 2
- What is in the mother's system passes through to her baby (3)

Group 3
- Drugs pass through the mother to her baby (5)
- What the mother takes affects the baby (1)

SUMMARY AND FREQUENCY OF STATEMENTS MADE BY FOUR DOCTORS WITH REGARD TO PHARMACOLOGICAL AGENTS TAKEN DURING PREGNANCY

AGREE WITH DRUG USAGE

Alright to take prescribed medication (4)

DISAGREE WITH DRUG USAGE

Against all non-prescribed medication (2)
Against herbal drugs (1)

PHYSICAL EFFECTS

There are proven teratogens (3)
Many drugs can cause physical defects (4)

MENTAL EFFECTS

Nil

NON-SPECIFIC EFFECTS

Nil

SAFE AND UNSAFE DRUG LIMITS

Shouldn't take drugs during the first trimester (3)
Asprin within 48 hours of delivery is dangerous (2)
Pain killers during labour can cause sleepy babies (2)
Tranquillizers within 48 hours of labour can cause sleepy babies (1)
Drug use only during first trimester if absolutely necessary (2)
Alright to take the occasional asprin/disprin during pregnancy (1)
Alright to take the occasional asprin/disprin after 14 weeks (1)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Don't know how asprin/disprin can harm foetus (2)
Still don't know the long term effects of drugs (4)

EXAMPLE OF PHARMACOLOGICAL DRUG EFFECT

Barbiturates, anti-cancer drugs can physically harm a baby (2)
Thalidomide cause physical deformities (4)
High doses of asprin is supposed to cause heart trouble (1)
Iron tablets contribute to nausea (2)
Tetracycline can discolour teeth (3)
Valium is supposed to cause cleft palate (2)
Tetracycline causes inhibition of bone growth (2)
Methodone seems worse than heroin (1)
Debendox is perfectly safe (2)
No evidence that marijuana harms the foetus (2)

PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE

Nil

MOTHER AND FOETUS PHYSICAL RELATIONSHIP

Almost all drugs pass through the placental barrier (3)

SUMMARY AND FREQUENCY OF STATEMENTS MADE BY FOUR DOCTORS WITH REGARD TO ALCOHOL TAKEN DURING PREGNANCY

AGREE WITH DRUG USAGE

Nil

DISAGREE WITH DRUG USAGE

Preferably do without during pregnancy (3)

PHYSICAL EFFECTS

Possible physical abnormalities (FAS) (4)
Growth retardation (4)
Low birth weight babies (2)
Baby can be born with withdrawal symptoms (2)
Heavy drinking can cause physical abnormalities (2)

MENTAL EFFECTS

Mental retardation (FAS) (4)

NON-SPECIFIC EFFECTS

Nil

SAFE AND UNSAFE DRUG LIMITS

Six drinks per day on a regular basis is harmful (3)
A couple of drinks a day doesn't appear to be harmful (4)
Occasional binge doesn't appear to matter (1)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Still don't know what causes Foetal Alcohol Syndrome (2)

EXAMPLE OF PHARMACOLOGICAL DRUG EFFECT

Not applicable

PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE

Nil

MOTHER AND FOETUS PHYSICAL RELATIONSHIP

Alcohol passes through the placental barrier (3)

SUMMARY AND FREQUENCY OF STATEMENTS MADE BY FOUR DOCTORS WITH REGARD TO CIGARETTE SMOKING DURING PREGNANCY

AGREE WITH DRUG USAGE

Nil

DISAGREE WITH DRUG USAGE

Prefer if mothers didn't smoke during pregnancy (4)

PHYSICAL EFFECTS

Affects foetal circulation (3)
Lower birth weight (4)
Poor weight gains after birth (2)
Smaller babies (4)

MENTAL EFFECTS

Lessens child's intelligence (1)

NON-SPECIFIC EFFECTS

Nil

SAFE AND UNSAFE DRUG LIMITS

Over 20 cigarettes per day is a significant change of being growth retarded (3)
Five cigarettes per day won't harm the foetus (2)

NO THOUGHTS AND/OR KNOWLEDGE ON DRUG USAGE

Not aware of cigarette smoking causing physical abnormalities (4)

EXAMPLES OF PHARMACOLOGICAL DRUG EFFECTS

Nil

PERSONAL/FAMILY/FRIEND'S EXPERIENCE OF DRUG USAGE

Nil

MOTHER AND FOETUS PHYSICAL RELATIONSHIP

Smaller babies probably due to decreased oxygen transfer across the placenta (1)