Knowledge of genital *Chlamydia trachomatis* infection in family planning clinic attenders

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Summary

The purpose of this study was to determine the level of awareness of genital Chlamydia *infection and level of knowledge related to this infection in family planning (FP) clinic attenders. Clients attending FP clinics during a 3 month study period were invited to complete an anonymous self-administered questionnaire. Five hundred and sixteen questionnaires from female attenders were analysed. Results showed that 54% of respondents had heard of* Chlamydia. *Subjective knowledge assessment for* Chlamydia *was low compared to that for other infections. Mean knowledge scores relating to genital chlamydial infection were low. There was no significant age-related trend in knowledge scores. The implications of these findings are discussed in relation to increased* Chlamydia *screening activity in FP clinics.*

Key words

genital chlamydial infection, knowledge levels

Key message points

- This population of family planning clinic attenders demonstrated a low level of awareness of genital tract chlamydial infection relative to other genital infections.
- The study indicated a low knowledge level of genital tract chlamydial infection.
- There was no significant age-related trend in knowledge levels.

Introduction

Chlamydia trachomatis is a common sexually transmitted disease. In Great Britain estimates of prevalence vary between 4.9% and 8% among the 16-25 year olds in the general population,[1, 2] whilst Hay et al found the level to be 29% in those attending genitourinary medicine (GUM) clinics.[3] The infection has serious potential sequelae. In women, infection may cause cervicitis, endometritis, salpingitis and pelvic inflammatory disease with the associated risk of reduced fertility and ectopic pregnancy. The costs associated with this infection were conservatively estimated at £50 million per year in 1994.[4]

Early sexual experience and multiple partners have been shown to be independent risk factors for chlamydial infection.[5] The incidence of chlamydial infection is highest among women under 25 years of age who have had more than five partners in the past year.[6, 7]

A characteristic feature of chlamydial infection is the high number of asymptomatic infections in women which has been estimated to be as high as 70%.[8] The majority of men with genital chlamydial infection do have symptoms,[3] although the proportion of asymptomatic men has been estimated to be as high as 25%.[8]

In view of the above, widespread screening is generally considered to play an important role in reducing prevalence when used in conjunction with contact tracing and treatment. Selective screening of those identified as being at high risk has been recommended.[1,9,10] One problem with selective screening is the low sensitivity of a risk assessment tool. In an adolescent population no single risk factor or combination of risk factors could identify more than 42% of chlamydial infections.[11] Others suggest that universal screening is more cost effective than selective screening in FP clinics if prevalence is greater than 3.1%.[12] Screening and treatment have been demonstrated to reduce incidence of chlamydial infection,[4] ectopic pregnancy[13] and pelvic inflammatory disease.[14]

Education of the public with respect to the importance of genital tract chlamydial infection is imperative. Improved education has a key role in primary prevention and is also essential in screening and secondary prevention methods if the detection of asymptomatic infection is to be correctly managed. There are few data available on the public level of knowledge relating to *Chlamydia,* although the indications from a limited range of studies[15-19] are that knowledge of sexually transmitted diseases in general, and specifically of genital tract chlamydial infection, is very limited.

The aims of our study were:

1. To determine the level of awareness of genital tract chlamydial infection in FP clinic attenders relative to their awareness of other genital infections.
2. To determine the level of knowledge related to genital tract chlamydial infection in FP clinic attenders.

3. To determine whether individuals perceive themselves as being at risk of contracting chlamydial infection.

Method

The study was conducted over a 3 month period in the FP clinics of one community trust. All clients attending the clinic during that time were eligible to participate. Staff briefing was carried out prior to the study and a copy of the protocol was available in each clinic. The tool consisted of a self-completion questionnaire using closed questions to be completed by the client between registering for an appointment and consultation with a member of nursing/medical staff. The main categories of questions were: awareness of genital infections and knowledge of the acquisition, symptoms, sequelae and treatment of genital tract chlamydial infection.

Participants were recruited by the clinic clerk who briefly outlined the purpose of the study prior to obtaining verbal consent. Written details explaining the structure and purpose of the study were distributed with each questionnaire. All questionnaires were anonymous and coded for administrative and analytical purposes. Written information about chlamydial infection was available in each clinic for clients and distributed by staff during or after consultation at their discretion.

A pilot study was conducted for a period of 1 month using one of the clinics chosen for its diverse client group. Its main purpose was to identify organisational, logistical and comprehension problems associated with the study. That clinic was then excluded from the main study for administrative purposes and to exclude the possibility of bias.

Local research ethics committee approval was obtained.

Statistical analysis

c^2 Analysis was used for determining age group related differences in levels of awareness and single regression analysis to ascertain relationship between age and mean knowledge scores. SPSS computer software was used and statistical advice was sought.

Results

The total number of completed questionnaires was 555. This represents approximately 12.5% of the 4200 clinic attendances over the 3 month period. Systems were in place to record the non-response rate, although in practice it was difficult to collect this data, primarily for organisational reasons related to the difficulty in carrying out such a study in a geographically scattered service.

Demographics

The respondents comprised 98% (n = 516) female and 2% male (n = 12), (missing values = 27). This compares with clinic population proportions of 95% female, 5% male. Analysis was confined to the female respondents. The mean age of respondents was 27 years (SD 10.4, range 14 - 63). Respondents were grouped in four age bands (Table 1).

Table 1 *Age distribution of female respondents*

Age band	Sample frequency	Sample percent	Clinic population
Under 19 year	131	27%	34%
20-29	175	36%	34%
30-39	102	21%	19%
40 and over	77	16%	13%

Valid cases = 485
Missing values = 31

Respondents were asked about their awareness of certain sexually transmitted/genital infections. The four most heard of infections were thrush (99%, n = 507), HIV/AIDS (98%, n = 501), genital warts (94%, n = 468) and hepatitis B (94%, n = 470) (Table 2). The three least heard of infections were trichomoniasis (21%, n = 86), bacterial vaginosis (42%, n = 186) and *Chlamydia* (54%, n = 240). Age breakdown indicated a general increase in awareness with increasing age. The youngest age group recorded lowest levels of awareness with respect to all infections apart from trichomonas, bacterial vaginosis and genital warts. With respect to *Chlamydia* there was a steady increase in awareness with increasing age (group 1 = 43.6%, group 2 = 57.8%, group 3 = 58.4%, group 4 = 60.6%).

Table 2 *Proportion of the sample who reported having heard of each genital infection*

Infection	Total response	Positive response	Percentage
Thrush	547	542	99%
HIV/AIDS	549	535	97%
Hepatitis B	534	500	97%
Genital warts	531	499	94%
Genital herpes	532	491	92%
Gonorrhoea	530	473	89%
Syphilis	527	451	80%
Chlamydia	475	252	53%
Bacterial vaginosis	470	196	42%
Trichomonas	444	89	20%

There were highly significant differences between age groups for awareness of gonorrhoea ($p < 0.001$), syphilis ($p < 0.001$) hepatitis B ($p = 0.004$) and trichomonas ($p = 0.006$). Age-related awareness of *Chlamydia* was not significant ($p = 0.06$).

It is possible to have heard of an infection and yet know nothing about it. A Likert scale was used to ascertain the individuals self-perception of their knowledge of *Chlamydia* and other genital infections. As this is a subjective assessment there is no comparability between one person's scores and that of another person. Consistency lies in the responses that one person gives to each of the questions, enabling comparison of the range of self-assessed knowledge of the sample between each of the infections. There was a wide variation in the average score of self-assessed knowledge. The lowest were trichomonas (mean = 1.1, mode = 0.0) and *Chlamydia* (mean = 1.6, mode = 0.0) and the highest were thrush (mean = 6.0, mode = 5.0) and HIV/AIDS (mean = 6.4, mode = 8.0). Standard deviations were similar for all the score ranges (range 2.17 - 3.69), consequently the levels of knowledge reflect the trend that was apparent in levels of awareness. Not only do more people know about HIV/AIDs and thrush, but they also consistently assess themselves as knowing more about them.

Respondents were asked to complete a series of 23 questions related to chlamydial infection. Each question was phrased as a statement with three answer options of 'true', 'false' and 'don't know'. Eighty-six percent of the respondents (n = 445) answered all the questions whilst 4% (n = 21) answered none of the questions and 94% (n = 488) answered 22 or 23 questions.

The mean scores were calculated on the basis of the number of correct answers in relation to the number of questions attempted by each respondent to exclude error caused by non-completion. Generally the mean scores were very low. No one scored more than 70% correct answers;

90% of the sample scored 40% correct answers or less and 37.2% of the respondents did not score any correct responses (valid cases = 506, missing cases = 8). The mean score for the whole sample was 17%. Breakdown of mean score by age group was as follows: age group 1= 13%, age group 2= 18%, age group 3 = 19%, age group 4 = 18%. The youngest age group had the poorest mean score. However, a single regression calculation of mean score against age group is not statistically significant (p = 0.15) indicating that there is no significant age-related trend in percentage correct scores.

The low levels of correct response were reflected across all the questions, with the highest score for any one question being 54.9% (Table 3).

Information sources

The most commonly cited information sources were magazines and books (61%, n = 174), FP clinics (33%, n = 80) television (31%, n = 76) and family and friends (31%, n = 77). The average number of sources listed was 1.5 (n = 209, missing cases = 307)

Results were similar for each age group, with magazines and books most commonly cited. School was recorded as an information source by 38% (n = 31) of the youngest age group. Fifty-five percent (n = 170) of respondents stated that they had never had any information. The high number of missing cases probably reflects the high percentage who stated that they had not heard of *Chlamydia.*

Thirty-one respondents (6.7%) felt that they were at risk of infection whilst 159 (34.6%) felt they were not at risk and 269 (58.7%) did not know. There were differences in responses between the age groups, with the highest perception of risk among age group 2, but no age related trend.

Discussion

General and relative awareness

The data indicate that this population have a low level of awareness of chlamydial infections both in absolute terms and in relation to their awareness of other genital infections. Caution should be exercised in applying these results to the whole clinic population. The sample was skewed somewhat with under representation of the under 19's relative to the normal clinic population, and a bias in favour of females. Possible explanations are the high attendance rates within youth clinics and consequent difficulties in distributing questionnaires. Also, clinic attendance in this age group is commonly a group activity and is not readily compatible with solitary activities such as questionnaire completion. The majority of male attenders are also among the younger age groups and attend youth clinics. It seems likely, therefore, that the two are related.

Opportunistic sampling leads to some degree of self-selection. However, if there is a skew in the findings it is likely to be in favour of those who had some awareness of STI's and would produce an over estimation of the knowledge levels of the underlying population.

Many of the findings are not surprising - HIV has had a vast amount of publicity whilst thrush is common, often readily detectable, and does not carry the stigma of STIs. Syphilis and gonorrhoea are traditional venereal infections but decreasing prevalence, particularly for syphilis, may account for a declining level of public awareness, particularly in view of the age-related statistically significant differences in awareness levels of these infections.

Knowledge levels

Among the respondents there was a low level of correct responses. Ninety percent of the respondents scored 40% or less, and 37% did not give any correct answers. For all but three of the questions less than 50% of the respondents gave the correct answer. If the questions are categorised as dealing with four areas; acquisition, symptoms, treatment and sequelae, the indication is that the level of *Chlamydia*-specific knowledge is lower than the raw figures suggest. Those related to acquisition (1,2,4,5,7 and 11) are not specific to chlamydial infection, but relate to transmission of STIs in general. Scores were highest for this category, providing four out of the top five scores, and it could be that respondents were drawing predominantly on general STI knowledge to answer these questions.

Questions specifically related to *Chlamydia* produced poor scores indicating that this population knows very little about chlamydial infection. Incorrect responses include both those who don't know and those who give an incorrect

Table 3 *Percentage correct answers (descending order) (numbers are added for convenience and do not reflect order within the questionnaire)*

	Question	% correct
1	Chlamydial infection can be caught by having sex with someone whom already has the infection	55.0
2	Chlamydial infection does not need to be treated	52.0
3	Chlamydia infection can be avoided by using a condom during sex	51.3
4	Chlamydia infection can be caught in swimming baths	49.0
5	Chlamydial infection can be caught from toilet seats	48.6
6	Chlamydial infection can be treated with antibiotics	46.4
7	If someone has had a chlamydial infection once they cannot catch it again	42.4
8	Chlamydia infection is caused by bacteria	39.0
9	Women can have chlamydial infection without knowing it	33.7
10	Chlamydial infection can cause long-term health problems	31.2
11	Chlamydial infection can be caught by sharing bath towels with an infected person	30.9
12	Men can have chlamydial infection without knowing it	27.4
13	Chlamydial infection can make women infertile	27.4
14	Chlamydial infection can make it painful for a woman to pass urine	22.6
15	Chlamydial infection can cause a heavy white discharge in women	21.6
16	If women have chlamydia infection they usually have symptoms	17.7
17	If men have chlamydial infection they usually have symptoms	15.4
18	Chlamydial infection produces ulcers (sores) in the genital area in women	15.3
19	Chlamydial infections can cause ectopic pregnancies (pregnancy in your tubes)	10.2
20	Chlamydial infection can cause fibroids	9.0
21	Chlamydial infection causes a smelly green discharge in women	8.9
22	Chlamydial infection makes women feel sore and itchy around the vagina	8.0
23	Chlamydial infection can cause cancer of the cervix	6.0

response. It is important to note that there is a considerable level of misinformation within this category.

The use of closed questions and self-completion questionnaires carries it's own limitations, although inclusion of the 'don't know' category reduces the likelihood of resorting to guess work. Self-completion questionnaires can adversely affect the accuracy of responses, as they are dependent upon adequate understanding and interpretation of the questions. In order to increase the accuracy of the questions the word 'can' was incorporated in those statements which described possible *Chlamydia*-related symptoms. Questions therefore require careful reading and interpretation, a factor that may have affected to accuracy of responses. However, the sensitive nature of the information precludes the use of any other method, an approach that is supported in the literature.[20, 21]

The most commonly quoted information source was magazines and books which clearly play a highly influential role in public awareness and the dissemination of health messages. The variation in responses to key messages may be due in part to the emphasis given to them in magazine articles, for example there appears to be a greater awareness of infertility than ectopic pregnancy as a consequence of chlamydial infection. One problem of this selective presentation of material is the variation in the importance and personal relevance of any piece of information for individuals.

The proportion of younger respondents who cited school as an information source is encouraging. In the area in which the study was conducted there is a commitment to effective collaboration of health professionals with the education service on provision of sex education. These findings may indicate the value of such an approach.

These findings have important implications for sexual health. Health promotion activities to raise levels of awareness are imperative at all levels if we are to attempt to reduce the prevalence of *Chlamydia* and the associated morbidity and health cost implications. If primary prevention is to be effective, individuals need accurate and relevant information on which to make decisions. Individuals can make decisions about personal risk of unsafe sex and their consequent use of barrier protection on the basis of cognitive errors, often based on social comparisons.[22] Evidence suggests that this has occurred in association with HIV where assessment of low personal risk can lead to a decrease in the vigilant use of safe sex messages and consequently increased risk of exposure to STI's.[15] The HIV message alone is therefore not sufficient and it is imperative to increase the public awareness of other STI's, particularly *Chlamydia* which, whilst not fatal, do have considerable health implications and are considerably more prevalent than HIV.

Some pieces of information are more important than others when one is attempting to convey health messages and encourage changes in behaviour. The key messages in terms of genital tract chlamydial infection are the asymptomatic nature of the infection and the long-term health consequences. Knowledge levels related to these were demonstrated to be low indicating the challenge that faces health educators.

Tentative indications are that targeted health education does improve knowledge. A similar study conducted with GUM clinic attenders, representing a highly selected at-risk population, demonstrated higher mean knowledge scores with an identical questionnaire.[18]

Much attention is currently being focused on the role of screening programmes in the management of chlamydial infection, particularly in view of the pilot projects currently underway. If widespread screening becomes a reality, large scale awareness campaigns will be necessary to inform the public, a view supported by CMO's expert advisory committee. The scale of the task is clearly considerable. In the interim, the debate is serving to maintain a high profile of this infection in the professional arena and a steady increase in the level of *Chlamydia* screening is to be expected. Our findings indicate that for many clients deemed to warrant screening there will be the necessity to educate the client first in order to obtain informed consent. It would seem appropriate to tackle the educational activities prior to, rather than as a consequence of, any screening programme using as wide a range of information sources as possible.

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