

Awareness and Knowledge of Sexually transmitted Infections among Young Adults: A Clinic based Survey Study

Background: Sexually transmitted infections (STI) remain a major global health concern, particularly among young adults. Despite preventive efforts, knowledge of STIs beyond HIV/AIDS is often limited, even in developed countries. *Aim:* To assess awareness and knowledge of common STI among young adults from developed countries and explore their views on sexual health education, screening, and protection. *Methods:* A cross-sectional study was conducted using an anonymous questionnaire among individuals aged 18–30 years attending an STI clinic at St. James’s Hospital, Dublin. Participants were originally from developed countries. The survey assessed demographics, STI awareness, education, and prevention practices. *Quantitative data* were analysed descriptively, and *qualitative responses* thematically. *Ethical approval* was granted by the Trinity College Dublin School of Medicine Research Ethics Committee. *Results:* Of 52 distributed questionnaires, 42 met inclusion criteria (response rate 84.6%). Most respondents were female (54.8%) and aged 18–24 years (59.5%). Awareness was highest for HIV/AIDS (81%) and chlamydia (57%), but low for gonorrhoea (24%), syphilis (50%), herpes simplex virus (19%), and hepatitis B (33%). Misconceptions were frequent, with several participants identifying non-STIs such as *Candida* as sexually transmitted. Although 64% had received formal sexual health education, only one-quarter had specific STI instruction, and fewer than half knew of national screening programs. Over half (51%) were dissatisfied with their STI knowledge. *Conclusion:* Young adults from developed countries show limited STI knowledge and persistent misconceptions despite reported sexual health education. Broader, evidence-based education and improved public awareness of screening are essential to strengthen STI prevention and control among youth.

Keywords: Sexually transmitted infections; STI awareness; Sexual health education; Young adults; Public health; Screening programs; Preventive behaviour

Introduction

Sexually transmitted infections (STI) remain a major global public health challenge, particularly among adolescents and young adults. The World Health Organization (WHO) estimates that more than 1 million new STIs occur every day worldwide, with approximately 374 million new infections of four curable STIs; chlamydia, gonorrhoea, syphilis, and trichomoniasis each year among adults aged 15 and 49 years (1). These infections are associated with substantial morbidity, including infertility, pelvic inflammatory disease, chronic pain, and adverse neonatal outcomes, and they increase the risk of human immunodeficiency virus (HIV) acquisition (2, 3).

1 Young people aged 15–24 years bear a disproportionate burden of these
2 infections. In the United States, this age group accounts for nearly half of all
3 reported cases of chlamydia, gonorrhoea, and syphilis despite representing only
4 one-quarter of the sexually active population (4). Globally, data from the Global
5 Burden of Disease (GBD) 2019 analysis show that while HIV incidence in
6 adolescents and young adults has declined, other STI have demonstrated
7 persistently high or increasing incidence in many regions, especially in sub-
8 Saharan Africa, the Western Pacific, and parts of Europe (5).

9 Multiple behavioural and structural factors contribute to these trends,
10 including early sexual debut, multiple partners, inconsistent condom use, limited
11 access to youth-friendly healthcare, and stigma surrounding sexual health
12 discussions (6). Moreover, asymptomatic infections particularly chlamydia and
13 gonorrhoea allow silent transmission and delayed diagnosis, amplifying
14 community spread (7).

15 Despite decades of preventive efforts, knowledge and awareness of STI
16 among young people remain inconsistent. A systematic review of global studies
17 found that many adolescents and young adults have poor understanding of STI
18 transmission routes, symptoms, and prevention, with considerable
19 misconceptions regarding condom effectiveness and the curability of specific
20 infections (8). In Europe, only 13–35 % of adolescents have heard of human
21 papillomavirus (HPV), and fewer recognize it as a STI (9). Similarly, a
22 multinational survey of university students across six countries reported
23 significant gaps in STI knowledge, especially regarding asymptomatic infections
24 and long-term complications (10).

25 Educational interventions have demonstrated measurable benefits, yet
26 comprehensive sexuality education remains limited or inconsistently
27 implemented across many developed and developing nations (11). Evidence
28 suggests that multifaceted strategies, combining school-based education, digital
29 and social media campaigns, and confidential screening programs are most
30 effective in improving knowledge, promoting safer sexual practices, and
31 reducing STI incidence (12, 13).

32 The continuing global burden of STI among young people underscores the
33 need to evaluate not only epidemiological patterns but also awareness, attitudes,
34 and preventive behaviours. Understanding the extent of knowledge and
35 misconceptions in this population is critical to informing future educational
36 initiatives and public health interventions that can effectively reduce
37 transmission, morbidity, and the associated social stigma worldwide.

38 39 40 **Methods**

41 42 *Study Design and Setting*

43
44 A descriptive, cross-sectional study was conducted to evaluate the
45 awareness and knowledge of STI among young adults originating from
46 developed countries. The study used an anonymous, self-administered paper-

1 based questionnaire distributed in a STI clinic. The clinic operates daily, and
2 data collection was conducted over six consecutive weeks.

3 4 *Study Population*

5
6 The target population consisted of sexually active young adults aged 18–30
7 years attending the STI clinic during the study period. Inclusion criteria were:
8 (1) individuals aged 18–30 years, (2) of either sex, and (3) originally from a
9 developed country defined as any European Union (EU) member state, the
10 United States, Canada, Australia, or New Zealand. Individuals from other
11 regions were excluded to maintain a homogenous study population with
12 comparable educational and socioeconomic backgrounds.

13 14 *Sampling and Recruitment*

15
16 A total of 52 questionnaires were distributed during the study period.
17 Participation was voluntary, and all eligible attendees were informed about the
18 study before participating. Recruitment posters displayed in the clinic provided
19 information about inclusion criteria and the purpose of the study. Interested
20 participants received an introductory letter and the questionnaire, along with a
21 pre-stamped return envelope. Participants could either complete and return the
22 questionnaire on-site or mail it back within seven days. The return of a
23 completed anonymous questionnaire was considered as implied consent to
24 participate.

25 26 *Questionnaire Development*

27
28 The questionnaire were developed by using a funnel-sequence design
29 approach, beginning with broad questions and progressing to more specific items
30 to maintain engagement. The draft instrument was reviewed by three healthcare
31 professionals' one STI specialist and two non-consultant hospital doctors for
32 clarity, accuracy, and face validity. Their feedback was incorporated into the
33 final version. The final instrument consisted of four main sections (17 questions
34 total).

35 36 *Data Analysis*

37
38 Responses were coded and entered into Microsoft Excel for descriptive
39 analysis. Quantitative data were summarized using frequencies and percentages.
40 Results were presented graphically in bar charts and tables to illustrate
41 distributions of knowledge, awareness, and educational exposure. Qualitative
42 responses from open-ended questions were thematically analyzed to identify
43 recurring themes, attitudes, and perceptions related to STI awareness.

44 45 *Ethical Considerations*

46

Ethical approval for the study was granted by the Medical Research Ethics. Permission to conduct the survey within the STI clinic was obtained from the clinic directors. As participation was anonymous and voluntary, and no personal identifiers were collected, written consent was not required. Completion and return of the questionnaire implied informed consent. The study adhered to the ethical principles of the Declaration of Helsinki.

Results

Response Rate and Participant Characteristic

A total of 52 questionnaires were distributed during the six-week study period. Of these, 44 were returned, yielding a response rate of 84.6%, and 42 met the inclusion criteria. Two questionnaires were excluded because the respondents were from non-eligible countries. As shown in Table 1, most participants were female (n = 23, 54.8%) and the remainder male (n = 19, 45.2%). The majority were aged between 18 and 24 years (n = 25, 59.5%), while 17 participants (40.5%) were between 25 and 30 years. Most respondents originated from EU countries (n = 37), followed by the United States (n = 4) and Australia (n = 1). Within the EU subgroup, the Republic of Ireland was most represented (n = 18), followed by the United Kingdom (n = 8), Lithuania (n = 3), Romania (n = 3), Sweden (n = 3), and the Netherlands (n = 2).

Table 1. *Participants Demographics*

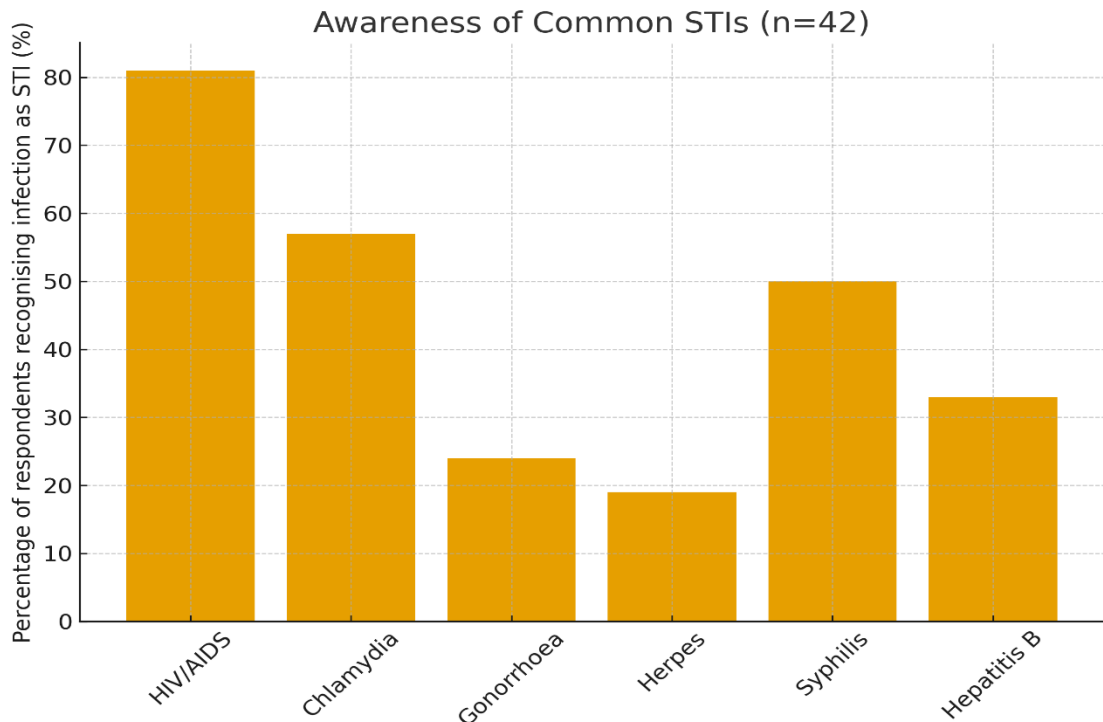
Characteristic	Number	Percentage (%)
Age 18–24 years	25	60
Age 25–30 years	17	40
Female	23	55
Male	19	45
From EU countries	37	88
From USA	4	10
From Australia	1	2

Awareness and Knowledge of STIs

Overall awareness of sexually transmitted infections varied substantially among participants. Knowledge of HIV was the highest, with 81% (n = 34) correctly identifying it as an STI. Awareness of Chlamydia trachomatis was moderate, as 57% (n = 24) recognized it as sexually transmitted, while 24% (n = 10) responded negatively and 19% (n = 8) were unsure. Fewer respondents recognized herpes simplex virus as an STI, with only 19% (n = 8) answering correctly, whereas 52% (n = 22) believed it was not and 29% (n = 12) were uncertain. Similar trends were observed for gonorrhoea, where only 24% (n = 10) correctly identified it as an STI, 41% (n = 17) did not, and 36% (n = 15) were unsure. Awareness of syphilis was higher, with exactly half of participants (n = 21) acknowledging it as an STI, and hepatitis B awareness was limited, with only

1 33% (n = 14) classifying it correctly. When asked to specify the most common
 2 STI, only 14 participants (33%) provided an answer. Among these, HIV and
 3 chlamydia were the most frequently mentioned, followed by syphilis and genital
 4 warts (figure 1). Only 12 participants (28.6%) claimed awareness of “other” STI,
 5 though several incorrectly cited non-STI conditions such as Candida infection or
 6 bacterial vaginosis, suggesting confusion between genital infections and true
 7 STI.

8
 9 **Figure 1.** *Awareness of different types of sexual transmitted infections among*
 10 *participants*



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13 *Formal Education and Information Sources*

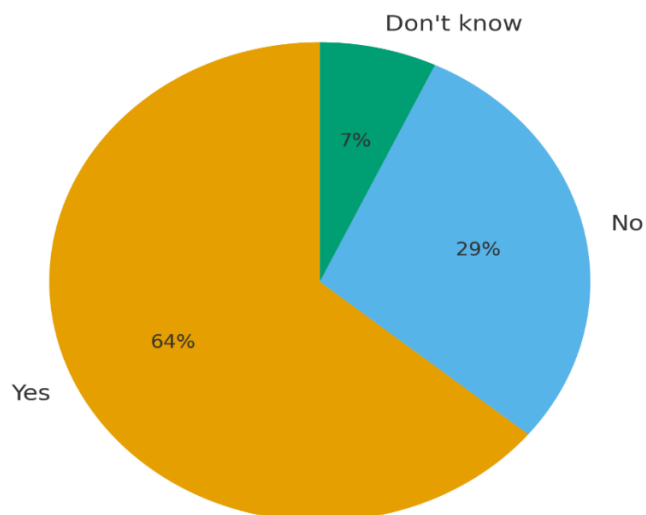
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15 Most respondents (64.3%, n = 27) reported having received formal
 16 education in sexual health or STI topics, while 28.6% (n = 12) had not, and 7.1%
 17 (n = 3) were unsure (figure 2). Colleges were the most common site of such
 18 education (59%), followed by secondary schools (33%) and other institutions
 19 (7%). Among those who had received formal instruction, 63% said it covered
 20 sexual health in general, 26% focused specifically on STI, and 11% included
 21 both. When asked whether sexual health education on STI should be
 22 incorporated into school or university curricula, 79% (n = 33) responded
 23 affirmatively. A larger proportion, 88% (n = 37), agreed that formal sexual
 24 education programs could increase awareness and knowledge about STI. With
 25 regard to information sources, most respondents viewed formal education as the
 26 most reliable way to obtain information on STI (79%), followed by books and
 27 magazines (52%), mass media (48%), and family members (36%). Friends were

1 less commonly cited (19%), and only a few participants (7%) mentioned other
 2 options such as public lectures or visits to doctors.

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4 **Figure 2.** *Percentage of reported receipt of formal sexual health education*



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7 *Screening and Protective Behaviours*

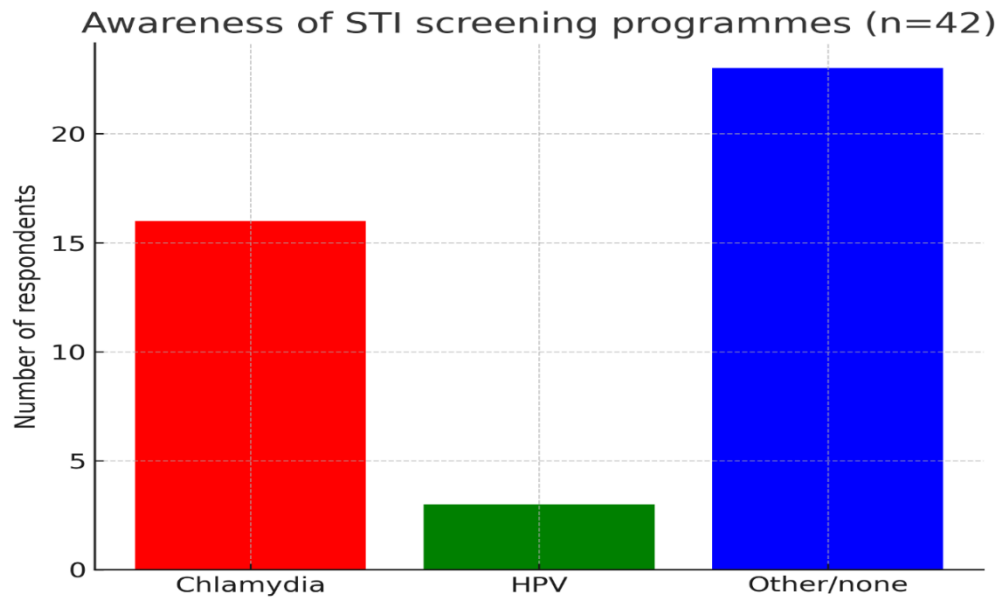
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9 Awareness of organized STI screening programs was limited. Fewer than
 10 half of the respondents (45%, n = 19) reported knowing of any screening
 11 program in their home country (figure 3). Among those who were aware,
 12 chlamydia screening was most frequently mentioned (84%), followed by HPV
 13 screening (16%). When asked about methods of protection, 56% (n = 20) stated
 14 they knew how to protect themselves against STI. The most common preventive
 15 measure cited was condom use (n = 6), followed by STI testing (n = 4),
 16 contraceptive pills (n = 4), vaccination (n = 3), and washing after sexual
 17 intercourse (n = 3). The latter responses indicate persisting misconceptions about
 18 effective preventive strategies (figure 4) When asked about their satisfaction
 19 with their current level of STI awareness, more than half (51%, n = 20) reported
 20 dissatisfaction, one-third (33%, n = 13) expressed satisfaction, and six
 21 participants (15%) were uncertain.

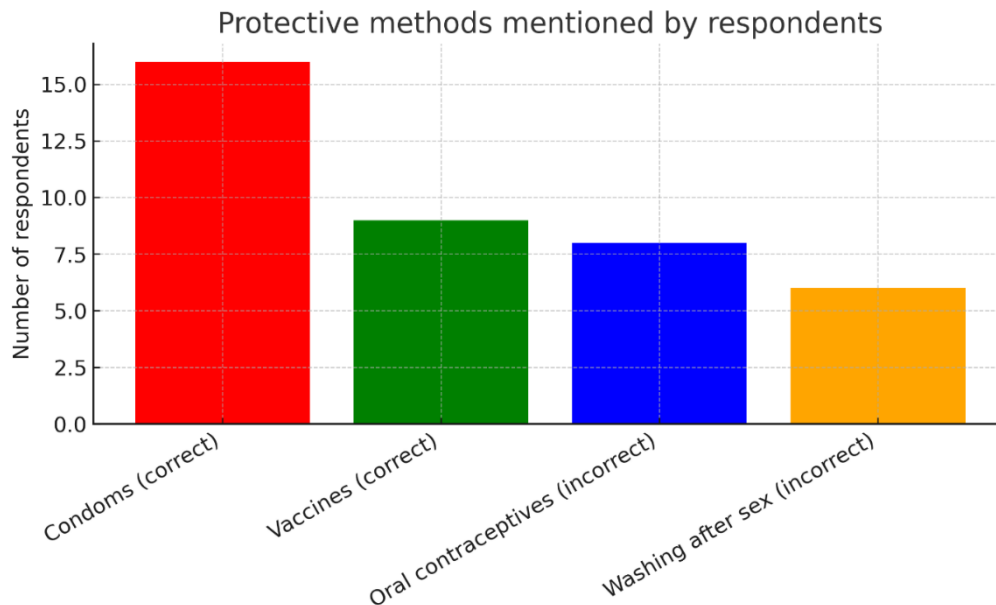
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1 **Figure 3.** Awareness programmes among participants. Types of STI screening
 2 programmes identified by participants, most commonly Chlamydia and HPV
 3 screening



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 5
 6 **Figure 4.** Methods of protection from STIs, Protection methods specified by
 7 participants, including condoms, STI testing, vaccination, and other methods



8
 9 **Qualitative Feedback**

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 11 Twelve participants provided open-ended written comments. Thematic
 12 analysis revealed several recurring perspectives. A number of respondents
 13 emphasized the lack of formal STIs screening programs and suggested
 14 introducing national screening initiatives similar to cervical smear testing.

1 Several noted that public knowledge of STIs among young people in developed
2 countries remains inadequate. Others highlighted the persistence of stigma and
3 embarrassment surrounding sexual health, which they felt discouraged open
4 discussion and routine testing. One respondent commented that completing the
5 questionnaire increased their awareness and motivation to learn more about
6 STIs.

7 Taken together, these findings indicate that although most participants
8 reported having received some form of sexual health education, their detailed
9 knowledge of specific STIs was limited, and misconceptions were common.
10 Awareness of available screening programs and effective preventive strategies
11 was also insufficient. Despite broad support for integrating STIs education into
12 academic curricula, many participants remained dissatisfied with their
13 understanding of STIs, underscoring the need for more comprehensive and
14 accessible sexual health education targeting young adults in developed countries.
15
16

17 **Discussion**

18
19 This study assessed awareness and knowledge of STIs among young adults
20 from developed countries attending a sexual health clinic. Despite most
21 participants reporting prior formal sexual education, the findings reveal major
22 gaps in knowledge, particularly regarding STIs other than HIV/AIDS and
23 chlamydia. These results align with global literature demonstrating that while
24 HIV/AIDS awareness is relatively high, understanding of other STIs including
25 gonorrhoea, syphilis, and HSV remains limited among adolescents and young
26 adults (14-17).

27 The high recognition of HIV/AIDS (81%) in the present study likely reflects
28 decades of targeted global campaigns, such as UNAIDS and WHO initiatives,
29 which have made HIV prevention a central public-health message (18). In
30 contrast, awareness of bacterial and viral infections such as chlamydia,
31 gonorrhoea, and herpes was considerably lower, with many participants unsure
32 or misinformed. This pattern mirrors findings from Germany and Denmark,
33 where only 23% and 31% of secondary-school students, respectively, recognized
34 chlamydia as an STI (19). Similar trends were reported in a UK study, where
35 fewer than half of adolescents could correctly identify syphilis or gonorrhoea as
36 sexually transmitted (20). Collectively, these studies suggest that young people,
37 even in highly developed settings, are often insufficiently informed about the
38 breadth of STIs beyond HIV.

39 Another significant observation was the confusion between true STIs and
40 other genital conditions. Several participants in this study cited fungal infections
41 and bacterial vaginosis as STIs, indicating conceptual misunderstanding. This
42 finding supports previous work by Nsuami et al, who reported that over one-
43 third of American high-school students misclassified non-sexually transmitted
44 infections as STIs (17). Such misconceptions can hinder appropriate care-
45 seeking behaviour and may contribute to stigmatization or neglect of
46 reproductive-health issues.

1 The majority of respondents in the current study had received some form of
2 sexual health education, primarily at college level, yet only a minority recalled
3 specific content focused on STIs. This observation underscores the limited scope
4 of many educational programs, which often emphasize pregnancy prevention
5 rather than infection prevention (21). In a multi-country European survey, only
6 38% of respondents aged 18–24 recalled receiving detailed instruction about
7 STIs, and fewer than 30% reported discussion of asymptomatic infection (22).
8 Likewise, studies from Sweden and the Netherlands countries with long-
9 standing sexual-education curricula show that while general sexual knowledge
10 is good, detailed STIs knowledge is inconsistent and varies by teacher training
11 and program quality (23).

12 Encouragingly, almost 90% of participants in this study agreed that formal
13 sexual-education programs could improve STIs awareness, consistent with
14 previous findings that comprehensive sexuality education is associated with
15 delayed sexual initiation and higher rates of condom use (24). The preference
16 for formal educational settings over informal sources such as peers or media also
17 reflects trust in structured, evidence-based learning environments. Nevertheless,
18 given the increasing use of digital media among youth, complementary
19 approaches using social-media campaigns and e-learning platforms could
20 reinforce school-based programs and address populations not reached through
21 traditional channels (25).

22 Awareness of national screening programs was strikingly low in the present
23 study. Less than half of respondents were aware of any STIs screening
24 initiatives, and only chlamydia and HPV programs were cited. Comparable
25 findings have been reported in Australia, the UK, and the United States, where
26 despite long-standing screening policies, public awareness of such services
27 remains limited (26, 27). Limited awareness may reduce participation rates and
28 delay diagnosis of asymptomatic infections, particularly chlamydia, which
29 accounts for the majority of new STIs cases globally (28).

30 When asked about methods of protection, most participants cited condom
31 use; however, some listed ineffective practices such as washing after sex or using
32 contraceptive pills, reflecting persisting myths. Previous studies in Europe and
33 North America have reported similar misconceptions. In a survey among Italian
34 adolescents, 25% believed oral contraceptives could protect against STIs (29).
35 Misunderstanding of prevention undermines safe-sex behaviours and highlights
36 the need for evidence-based public-health messaging.

37 Self-reported dissatisfaction with STIs knowledge expressed by more than
38 half of respondents underscores the perceived inadequacy of current education
39 and outreach efforts. Qualitative comments further revealed embarrassment and
40 stigma as barriers to open discussion, consistent with previous research showing
41 that social discomfort remains a key obstacle to seeking sexual-health
42 information and testing (30).

43 Although the present study was conducted among young people from
44 developed countries, the findings resonate with global evidence indicating
45 persistent educational gaps in sexual health literacy. The World Health
46 Organization's 2023 global STIs strategy emphasizes that inadequate knowledge

1 and stigma continue to impede prevention and early diagnosis across all income
2 settings (31). Given that young adults account for nearly half of new STIs
3 infections worldwide, strengthening education and awareness remains a critical
4 component of control strategies (32).

5 6 *Study Strengths and Limitations*

7
8 This study provides valuable baseline data on STIs knowledge among young
9 adults in developed countries, using an anonymous, ethically approved design
10 that encouraged candid responses. The high response rate (84.6%) enhances
11 internal validity. However, certain limitations should be acknowledged. The
12 sample size was relatively small and drawn from a single clinic, which may limit
13 generalizability. The self-selected nature of the sample patients attending a STIs
14 clinic could also bias results toward individuals with greater exposure to sexual-
15 health topics. Furthermore, the use of self-reported questionnaires introduces
16 potential recall and social-desirability bias. Future studies should employ larger,
17 more diverse samples and standardized instruments validated across multiple
18 countries.

19 20 *Public-Health Implications*

21
22 The findings have clear implications for sexual-health promotion policies.
23 First, they highlight the need to broaden the content of formal sexual-education
24 curricula beyond HIV to encompass other prevalent STIs such as chlamydia,
25 gonorrhoea, syphilis, herpes, and HPV. Second, awareness campaigns must
26 address persistent misconceptions regarding transmission and prevention,
27 emphasizing evidence-based protective behaviours such as consistent condom
28 use, vaccination, and regular screening. Third, digital interventions and social-
29 media campaigns could be leveraged to complement formal education, reaching
30 youth outside traditional educational settings. Finally, the study reinforces the
31 importance of national STIs screening programs, not only as clinical tools but
32 also as educational entry points for preventive counselling.

33 34 35 **Conclusion**

36
37 This study demonstrates that awareness and knowledge of STIs among
38 young people from developed countries remain suboptimal, despite reported
39 exposure to formal sexual-education programs. While knowledge of HIV/AIDS
40 and chlamydia was relatively high, understanding of other common infections
41 was limited, and misconceptions persisted regarding modes of transmission and
42 protection. The majority of participants expressed dissatisfaction with their STIs
43 knowledge and supported the inclusion of comprehensive sexual-health
44 education within academic curricula.

45 The results mirror global findings showing that young adults remain a
46 vulnerable group for STIs acquisition due to knowledge gaps, inconsistent

1 condom use, and limited screening awareness. These findings underscore the
 2 urgent need to strengthen and modernize sexual-education initiatives, expand
 3 access to youth-friendly screening services, and use innovative communication
 4 strategies to normalize sexual-health discussions. By addressing these gaps,
 5 public-health systems can help reduce the global burden of STIs and promote
 6 safer sexual behaviours among young people worldwide.

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