

# Determinants of health in recently arrived young migrants and refugees: a review of the literature

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## ABSTRACT

**BACKGROUND:** adolescent migrants are in a state of double vulnerability because of their age and migration experience. The purpose of this review was to identify risk and protective factors serving as a base for health promotion of young recent migrants.

**METHODS:** we assessed 95 papers identified through a MEDLINE search. Thirty-five papers were retained for review and analysed within the following themes: general health, mental health, cigarette smoking and sexual health.

**RESULTS:** young migrants' health was considered good at arrival, but deteriorated with length of stay due to factors linked to migration. Mental health was determined by pre-migration factors, such as violence, and was strongly related to post-migration factors, such as asylum procedures, discrimination and low socio-economic status. Social support and family cohesion were identified as protective factors. We found a lack in epidemiologic data about tobacco use and sexual health issues. Results from North America indicated less frequent smoking in certain groups of immigrants. Some data suggested more frequent teenage pregnancies and abortions in young refugee women as compared to the host population. We also found some evidence about increased risk of sexually transmitted infections and HIV/AIDS in certain immigrant populations.

**CONCLUSIONS:** migrant adolescents are generally healthy at arrival. The migration process and social inequalities after arrival influence their long-term health. A comprehensive approach to health promotion is necessary, taking into account risk and protective factors. More research is needed, in order to obtain more specific epidemiologic data about adolescent migrants, as well as longitudinal and qualitative data.

*Key words: Adolescent, Transients and migrants, Primary health care, Acculturation, Socioeconomic factors*

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## INTRODUCTION

With increasing mobility, the population is becoming more and more diverse in most European countries. Health professionals will

therefore encounter an increasingly diverse patient population.

Migrants in Europe are of a wide variety of origins (1). The majority of immigration is due to employment or family reasons, and only a

minority of immigrants are refugees or asylum seekers. Immigrants are, on average, younger than the population of their host country, and more frequently men. In comparison with the host population, immigrants have consistently higher levels of unemployment, a lower income level and a significantly higher risk of poverty and social exclusion. This risk is even more pronounced in households with children. Lower socio-economic status and poverty (2) are now well known to be associated with adverse health outcomes, placing the migrant population in a vulnerable state.

The World Health Organisation (WHO) defines adolescence as the period from 10 to 19 years of age (3). Reproductive health issues (such as early pregnancy and HIV infection), mental health problems and tobacco and alcohol use are some of the major health issues affecting adolescents worldwide (4). According to WHO, a large number of premature deaths and a significant part of the disease burden in adults are associated with conditions or behaviours that began in their youth. Adolescence can therefore be seen as a vulnerable age group, but also as a key period for health promotion.

Adolescent healthy development is now increasingly understood in the light of comprehensive models integrating risk and protective factors and health assets (5), with environmental and social factors playing a central role. Adolescents living in contexts providing positive resources, including interpersonal resources, absence of violence and healthy role-modelling, are more likely to engage in health-promoting behaviour (6).

The Health Behaviour in School-aged Children (HBSC) study (7) represents the most comprehensive report on the social contexts and health-related behaviour of young people aged 11, 13 and 15 years in Europe and North America. Health outcomes are influenced by socioeconomic status as well as geographical location. Initiatives to improve the health of young people therefore need to take into account social and environmental determinants.

Adolescent refugees and migrants thus face a double challenge: as well as having to cope with the transition from childhood to adulthood, they have to master the difficulties of migration, involving loss of family ties, experiencing war or violence and integration into a new culture.

The aim of this literature review is to draw attention to risk and protective factors acting as determinants of health in recently arrived

young immigrants, with a focus on European countries. One of the difficulties lies in making a clear distinction between different groups of migrants, such as economic immigrants or refugees, who will not necessarily have the same health promotion needs. Hypothesizing that adolescent recently arrived migrants and refugees are a particularly vulnerable group, we focused our review on this population.

## METHODS

For this narrative review, several MEDLINE/PubMed searches were conducted using the following terms: “adolescent”, “young”, “teenage” combined with “migrant”, “refugee”, “immigrant”, “asylum seeker” and “health”, “quality of life”, “health promotion”, “prevention”, “mental health”, “smoking”, “tobacco”, “sexual health”, “reproductive health”. No beginning time limit was used, and the search was carried out until May 2012. In addition, references of retrieved papers were searched.

We included papers published in English, French, German and Portuguese, using quantitative or qualitative methods to investigate the following topics: general health and quality of life, mental health, sexual and reproductive health and tobacco use, in a population of recently arrived migrants or refugees including the adolescent age group. Some papers studying exclusively adults were included for topics where specific data on adolescents was scarce (e.g. general health).

In order to be able to apply the findings to the European context, we preferred literature from Europe, although some literature from outside Europe (mainly North America and Australia) was included when little other information was available (especially for tobacco use).

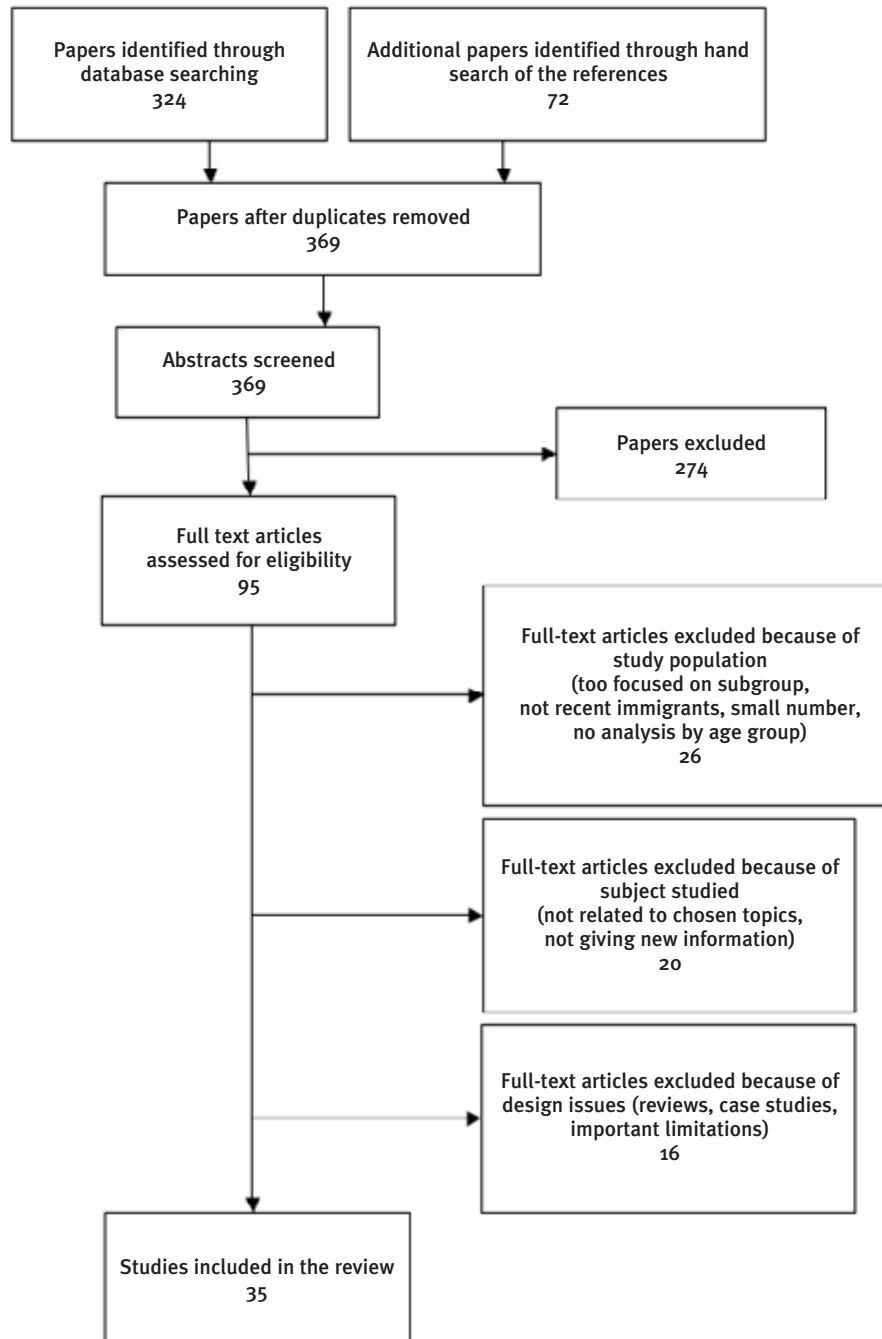
This search strategy (Figure 1) yielded 369 potentially relevant papers, of which 95 full-text articles were assessed for eligibility. Thirty-five were retained for review.

## RESULTS

Thirty-five papers were analysed thematically. The themes were chosen because of their relevance for adolescent health (4) and discussed in the following sections: general health, mental health, smoking, and sexual health. Tables 1 to 4 summarise the studies included in this review.

FIG. 1

## LITERATURE SEARCH FLOW CHART

**General health (Table 1)**

Health services directed towards young refugees and recent migrants are still too often focused on vaccinations and infectious diseases. Recommendations of good practice usually concentrate on barriers to accessing health care, such as language problems and cultural differences,

or on difficulties related to specific subgroups, such as undocumented migrants (8, 9). The specific needs associated at the same time to the migrant status as well as the period of adolescence are often not clearly identified.

Some studies have found recent migrants to be healthier than native-born persons and have led to the “healthy migrant hypothesis”, which describes

TABLE 1

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: GENERAL HEALTH |                                 |   |   |                    |   |  |   |
|--|---------------------------------|---|---|--------------------|---|--|---|
| AUTHORS, YEAR (REF. #)   | COUNTRY                         | STUDY DESIGN                              | STUDY POPULATION  | AGE                | MEASUREMENTS  | RESULTS  | POSSIBLE BIAS/LIMITATIONS   |
| Priebe et al. 2011 (6)   | 16 European Union member states | Cross-sectional survey                    | Health care professionals working with migrant populations (n=240)                                    |                    | Structured interviews and case vignettes (about views and experiences working with migrant patients)  | Components of good practice identified: flexibility, interpreting services, working with social services, cultural awareness, information material, clear guidelines   | Sampling frame not strictly adhered to in all countries. Self-selection of interviewees. Statements may be influenced by personal views rather than country policy  |
| Devillé et al. 2011 (7)  | 16 European Union member states | Delphi study                              | Experts from academia, Non-Governmental Organisations, policy-making and health care practice (n=134) |                    | Consensus list of the most important factors characterising good practice in health care for migrants | Themes identified: Equal access to health care, empowerment of migrants, culturally sensitive services, quality of care, communication, respect towards migrants, networking, outreach activities, availability of data about migrant health care and prevention | Lack of representativeness of experts (over-representation of mental-health professionals in some countries). Same weight accorded to countries with limited and countries with greater experience in providing health care to migrants |
| Abraido-Lanza et al. 1999 (8)                                    | United States of America        | Longitudinal mortality study              | Cuban, Puerto Rican and Mexican immigrants, non-Latino whites (total n=319 093)                       | 25 years and older | Mortality rates of the different groups of immigrants, as compared to non-immigrants                  | Lower mortality in Cuban and Puerto Rican immigrants than non-Latino whites  | No factors other than mortality analysed  |
| Razum et al. 1998 (9)  | Germany                         | Retrospective analysis of mortality rates | Turkish immigrants  | All ages           | Death registry data (1980 to 1994): standardized mortality rates                                      | Age-adjusted mortality rate or Turkish immigrants was half that of Germans, and lower than that of Turkish residents in Ankara   | No analysis of cause-specific mortality rates   |

an empirically observed mortality and morbidity advantage of certain migrant groups relative to the host population (10). Studies observing this effect are often focused on mortality rates or on specific subgroups (11, 12), whereas this effect is less pronounced when taking into account multiple variables such as age, gender and origin (13). A survey conducted in Switzerland (14) describes

the effects of socio-economic and demographic factors on health in a sample of adult migrants. Recently arrived immigrants are generally in good health, whereas health declines with time spent in Switzerland, to become worse than the health of the host population. The differences in health indicators can partially be explained by the migrants' lower level of education, inadequate language skills,

TABLE 1 (CONTINUED)

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: GENERAL HEALTH |                 |  |   |                                  |   |   |   |
|--|-----------------|--|---|----------------------------------|---|---|---|
| AUTHORS, YEAR (REF. #)   | COUNTRY         | STUDY DESIGN                                       | STUDY POPULATION  | AGE                              | MEASUREMENTS  | RESULTS   | POSSIBLE BIAS/ LIMITATIONS  |
| Boulogne et al. 2012 (10)  | France          | Retrospective analysis of mortality rates          | Whole population of France  | All ages                         | Complete mortality data (2004 to 2007), by gender, age, country of birth and cause of death                     | Differences in mortality rates between foreign-born and French-born varied by age, gender, country of birth and cause of death (higher migrant mortality for infectious diseases and diabetes, but lower migrant mortality for violent death and neoplasms) | Potential bias in mortality data. No data on health-selective migration. Effect of socio-economic level difficult to separate from other factors. "Foreign-born" category does not take into account nationality at birth |
| Swiss Federal Office of Public Health (11)                       | Switzerland     | Cross-sectional surveys in 2004 and 2010           | Sample of immigrants and refugees from 6 countries (Portugal, Turkey, Kosovo, Serbia, Sri Lanka and Somalia), and a sample of non-migrants (total n=16 074) | 17-74 years                      | Computer Assisted Telephone Interviews  | Recently arrived migrants are in better health than non-migrants. Health declines with length of stay (greater effect in women). Use of preventive services is lower in migrants  | Small sub-group samples. No longitudinal data (possible cohort effect)  |
| Renard et al. 2005 (12)  | Belgium         | Cross-sectional survey                             | Recently arrived immigrants (n=158), of 37 different nationalities  | 11-18 years (mean 15.4)          | Quality of life questionnaire (VSP-A) and medical record analysis   | Quality of life deteriorates with length of stay and is lower if lack of social support   | Relatively small sample. No subgroup analysis   |
| Gerritsen et al. 2006 (13)                                       | The Netherlands | Cross-sectional survey                             | Asylum seekers and refugees from Afghanistan, Iran and Somalia (n=410)  | 18 years and older (mean age 37) | SF-36 (general health) List of 19 chronic conditions Harvard Trauma Questionnaire Hopkins Symptoms Checklist-25 | High prevalence of both physical and mental health problems (51.7% report poor general health status). Significant association between legal status and poor general health/ depression/ anxiety  | High non-response rate (one third). Measurement instruments not yet validated in the study population   |
| Gilgen et al. 2005 (14)  | Switzerland     | Qualitative and quantitative cross-sectional study | Immigrants from Bosnia and Turkey, internal Swiss migrants (n=146)  | 16 years and over                | Explanatory Model Interview Catalogue (EMIC) in Turkish, Bosnian and Swiss versions                             | Psychological distress was most frequently reported health problem. Traumatic migration experience often identified as cause of illness by patients   | Heterogeneous groups, small sample  |

experiences of discrimination, and persecution and violence in the country of origin, indicating the close relationship between social determinants and health. A decline in perceived health over time has also been observed in a population of immigrant adolescents in Belgium (15). This study stresses the importance of school health services for early detection of health problems, integration of young migrants and access to primary care services.

Factors linked to the migration process, such as experiences of war, involuntary migration and insecure legal status, are associated with poor self-reported health in adult asylum seekers and refugees in The Netherlands (16). In a Swiss study (17), adult migrants consulting at a general health clinic reported mainly somatic complaints, although psychosocial problems were more frequent. Many patients in this study identified traumatic migration experiences as a cause of their illness. The main messages provided by the authors are the importance of migration-specific history-taking including both somatic and psychosocial dimensions, of training of health professionals, as well as the need for interaction of all services for migrants.

### Mental health (Table 2)

The existing literature mainly focuses on the mental health of refugees, who cumulate numerous vulnerability factors and have a higher prevalence of mental disorders than the general population (18). Young people are generally at risk of mental health problems, which are strongly related to general health and developmental concerns. Migration may further destabilise the balance between risk and protective factors.

#### *Pre-migration risk factors*

Stressful pre-migration experiences, especially witnessing violence, are known to be important risk factors for refugee children. The number of traumatic experiences and refugee camp residence have been shown to be associated with the development of post-traumatic stress disorder (PTSD) (19) and other mental health problems, such as anxiety disorders (20).

#### *Post-migration risk factors*

Whereas pre-migration traumatic experiences are key risk factors, post-migration life circumstances seem to be even more important for long-term

mental health. One of the few longitudinal studies in this field (21) has identified a number of predictors for long-term mental health problems in young refugees. Thus, the number of stressful events after arrival, experiences of discrimination and lack of stability and integration into the host society were predictive of psychological problems eight to nine years after arrival.

Perceived discrimination by the community or the society has been associated with more severe PTSD symptoms (22). Lack of family and community support also predicts higher risk of psychological distress and is a well-known problem in unaccompanied refugee minors (23, 24).

Administrative processes are another source of post-migration stress. A long asylum procedure has been correlated with anxiety, depressive and somatoform disorders in adult asylum seekers (25). Asylum seeking children and adolescents having experienced protracted stays in asylum centres and multiple relocations within the system have been shown to have an increased risk of mental difficulties (26).

#### *Protective factors: the role of integration and family support*

Several psychological processes are initiated when arriving into a new society. The psychosocial functioning of refugee adolescents from Ex-Yugoslavia resettled in Australia (27) was significantly influenced by the acculturation process. Thus, adolescents identifying with attitudes of integration (defined as maintaining original culture while participating in the host society) showed the highest ratings of self-worth and peer social acceptance. In contrast, adolescents identifying with attitudes of marginalisation (negative attitudes towards both cultures) or assimilation (rejecting original culture and completely adopting the host culture) had lower scores of psychosocial functioning. Maintaining connections with the native culture seemed to be a protective factor for the mental health in this population.

Protective factors for adolescent mental health have been comprehensively studied in a large survey in Germany (28). Migrant families generally had lower socio-economic status than non-migrant families. This finding was linked to a higher prevalence of mental health problems and generally lower personal and social resources. Interestingly, no difference was observed concerning family resources, indicating that living in a foreign society may strengthen cohesion in migrant families.

TABLE 2

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: MENTAL HEALTH |                         |                        |  |   |  |  |   |
|---|-------------------------|------------------------|--|---|--|--|---|
| AUTHORS, YEAR (REF. #)  | COUNTRY                 | STUDY DESIGN           | STUDY POPULATION   | AGE   | MEASUREMENTS   | RESULTS  | POSSIBLE BIAS/LIMITATIONS   |
| Maier et al. 2010 (15)  | Switzerland             | Cross-sectional study  | Adult asylum seekers, 73% male, from 18 different countries, in their first year of residence (n=78) | 18-63 years (mean 29.9)                                 | Structured interviews (mental health). Health insurance records (service use)                  | Prevalence of psychiatric disorder: 41%. Psychiatric treatment: 26%. Average number of appointments with any doctor: 10.7 per year   | Physical health not directly assessed   |
| Heptinstall et al. 2004 (16)                                    | United Kingdom (London) | Cross-sectional study  | Refugee children with at least one parent/relative (n=40)  | 8-14 years  | Interviews with parents (Impact of Event Scale, Depression Self Rating Scale for Children)     | Significant correlation between number of pre-migration traumas and children's PTSD scores. Significant correlation between number of post-migration stresses and children's depression scores | No data reported by children directly. Small sample size                                      |
| Montgomery et al. 2005 (17)                                     | Denmark                 | Cross-sectional survey | Recently arrived refugee children from Middle-East, accompanied by a parent (n=3011)                 | 3-15 years  | Structured interview with parents (exposure to organized violence and mental health)           | A majority of children exposed to conditions of war and refugee camps. About two thirds suffered from anxiety, about 30% from sleep problems   | Only parent-reported data. Specific subgroup of refugees regarding origin. Large range of age |
| Montgomery et al. 2008 (18)                                     | Denmark                 | Longitudinal study     | Refugee children (n=131) from the Middle East (follow-up of population described in ref. 17)         | 11-23 years (age at follow-up, 8-9 years after arrival) | Structured interviews with parents and children (Youth Self Report or Young Adult Self Report) | Psychological problems 8-9 years after arrival predicted by mother's education, indicators of adaptation and stressful life context in exile   | Based on self-ratings only. High rate of non-participation. Specific group of refugees        |

TABLE 2 (CONTINUED)

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: MENTAL HEALTH |                          |                        |   |                         |   |  |  |
|---|--------------------------|------------------------|---|-------------------------|---|--|--|
| AUTHORS, YEAR (REF. #)  | COUNTRY                  | STUDY DESIGN           | STUDY POPULATION  | AGE                     | MEASUREMENTS  | RESULTS  | POSSIBLE BIAS/LIMITATIONS  |
| Ellis et al. 2008 (19)  | United States of America | Cross-sectional survey | Adolescents from Somalia, arrived since at least one year (n=135)   | 11-20 years (mean 15.4) | Interviews: UCLA PTSD-Index, Depression Self Rating Scale, War Trauma Screening Scale, Adolescent Post War Adversities Scale, Acculturative Hassles Inventory, Every Day Discrimination | Cumulative trauma related to PTSD and depression symptoms<br>Post-settlement stressors and perceived discrimination associated with greater PTSD symptoms<br>Discrimination strongest predictor of depressive symptoms | No longitudinal follow-up, causal relationship impossible to determine. Symptoms measured with screening instruments rather than diagnostic interviews |
| Bean et al. 2007 (20)   | The Netherlands          | Cross-sectional study  | Unaccompanied refugee minors (n=920) from 48 countries (43% from Angola), 29.8% female. Compared with 1059 Dutch children and 1294 migrants and refugees in Belgium | 12-18 years (mean 15.8) | Self-administered questionnaires: HSCL-37A, Stressful Life Events (SLE), RATS   | Significantly higher scores in URM's for internalizing problems, traumatic stress reactions and stressful life events  | Based on recall of stressful life events. Difference in response rates in the 3 groups. Based on self-report. No back-translation of questionnaires    |
| Hodes et al. 2008 (21)  | United Kingdom           | Cross-sectional survey | Unaccompanied asylum-seeking minors (n=78), 67% male; compared with accompanied asylum-seeking minors (n=35)  | 13-18 years (median 17) | Structured interviews, Self-report questionnaires: Harvard trauma questionnaire, Impact of Event Scale, Birlson Depression Self-Rating Scale  | Low-support living arrangements were predictors for post-traumatic stress symptoms   | Relatively small sample size; direction of causality between associations not proven (no longitudinal data)  |
| Laban et al. 2004 (22)  | The Netherlands          | Cross-sectional survey | Adult asylum seekers from Iraq: arrived within less than 6 months (n=143) or more than 2 years (n=151).   | 18 years and older      | Structured interviews: Adverse life events, conflict-related events, psychiatric disorders.   | Significantly higher prevalence of anxiety, depression and somatoform disorder in group with long procedure  | High number of non-contacts  |
| Nielsen et al. 2008 (23)  | Denmark                  | Cross-sectional survey | Parent-accompanied asylum-seeking children living in asylum centres (48% from former Yugoslavia, 27% from Iraq) (n=246)   | 4-16 years              | Strengths and Difficulties Questionnaire: filled in by teachers for all children, plus by the 11-16-year old children themselves  | Increased risk (OR=5.5) of mental difficulties in children asylum-seeking for more than one year   | No clinical investigation. No longitudinal data. Parents not involved  |



TABLE 2 (CONTINUED)

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: MENTAL HEALTH |           |                        |  |                         |   |   |  |
|---|-----------|------------------------|--|-------------------------|---|---|--|
| AUTHORS, YEAR (REF. #)  | COUNTRY   | STUDY DESIGN           | STUDY POPULATION   | AGE                     | MEASUREMENTS  | RESULTS   | POSSIBLE BIAS/LIMITATIONS  |
| Kovacev et al. 2004 (24)  | Australia | Cross-sectional survey | Adolescent refugees from former Yugoslavia (n=83), 51% girls   | 12-19 years (mean 15.3) | Self-administered questionnaire: Social Support Scale for Children, Global self-worth and peer social acceptance scales, Acculturation Attitude Scale | Positive relationship between integration and psychosocial adjustment. Marginalisation and assimilation negatively associated with adjustment                                       | Low response rate from mainstream schools. Measures based on self-perception rather than behaviour |
| Erhart et al. 2007 (25)   | Germany   | Cross-sectional survey | Population-based representative sample of adolescents (n=6691) | 11-17 years             | Self-administered questionnaire (KiGGS), containing scales about personal, family and social resources  | Personal and social protective factors less developed in migrants. Lower socio-economic status in migrants. Risk behaviour is negatively correlated to number of protective factors | Complex interactions between risk and protective factors difficult to explain                      |

### Substance use: the example of cigarette smoking (Table 3)

Most surveys studying tobacco use in migrant adolescents have been carried out in North America, where patterns of immigration are different from the ones in Europe. In addition, studies are generally cross-sectional, although follow-up data would add knowledge about the effect of acculturation. Thus, the conclusions cannot be applied directly to the European context, although some interesting observations are worth considering.

The vast majority of smokers begin using tobacco products well before the age of 18 years. Surveillance of tobacco use among youth in several countries has revealed that the problem is of widespread concern (29). The HBSC survey (7) has found considerable variations between countries in early smoking initiation, but without clear geographic patterns or strong associations with socio-economic status. Early initiation to smoking predicts later substance use and has

been observed to be less frequent in migrant populations in North America (30).

Lower cigarette smoking rates have also been found among foreign-born adolescents in Canada, as compared to the general adolescent population (31), although this pattern is strongly linked to the region of origin (32). Smoking rates may increase with length of stay, although this effect has not been confirmed in all studies (31). Maintenance of traditional values, family resources and peer influences seem to act as protective factors against the negative effects of poverty or socio-economic difficulties in certain populations (33, 34).

### Sexual and reproductive health (Table 4)

Many risk and protective factors are known to influence multiple adolescent sexual and reproductive health outcomes. Early sexual activity has been associated with risk behaviours, such as smoking and alcohol use (35), and increases the risk of unintended pregnancy and sexually transmitted infections.

TABLE 3

## CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: SMOKING

| AUTHORS, YEAR (REF. #)  | COUNTRY                  | STUDY DESIGN                     | STUDY POPULATION   | AGE         | MEASUREMENTS  | RESULTS  | POSSIBLE BIAS/LIMITATIONS   |
|---|--------------------------|----------------------------------|--|-------------|---|--|---|
| The Global Youth Tobacco Survey Collaborative Group 2002 (26) | 43 countries (worldwide) | Cross-sectional survey           | Representative school-based samples of adolescents (n>230 000) | 13-15 years | Self-administered questionnaire (Global Youth Tobacco Survey GYTS)                                  | Current use of tobacco products ranges from 62.8% to 3.3%. Nearly 25% of current smokers have smoked their first cigarette before age 10 years   | Great variation among nations (correlates of use need to be studied)  |
| Vega et al. 2007 (27)   | United States of America | Cross-sectional prevalence study | Sample from the NHSDA (n=19 430)                               | 12-17 years | Data derived from the National Household Survey on Drug Abuse (NHSDA)                               | Lower risk of smoking initiation and tobacco dependence in African-Americans and Hispanic immigrants. Increased risk for substance use disorder among smokers. Early onset of smoking related to earlier drug use initiation | Self-reported data (possible social desirability and recall bias). Direction of influence between mental illness and smoking not made clear                         |
| Holowaty et al. 2000 (28)                                     | Canada (Toronto)         | Cross-sectional survey           | School-based sample of adolescents (n=1 236)                   | Not stated  | Self-completion of lifestyle questionnaire  | Students identifying themselves as Canadian were more likely to be current smokers. No apparent increase in smoking rates for immigrants after 2 or more years in Canada   | Students not present at school on the day of survey not included (13%). Ages not stated (only school grades 9 to 13). Ethnicity data relying on self-identification |
| Asbridge et al. 2005 (29)                                     | Canada (Toronto)         | Cross-sectional survey           | School-based sample (n=3 400)                                  | 13-19 years | Self-administered questionnaires (data drawn from the Toronto Youth Crime and Victimization Survey) | Smoking varies among different ethnicities: Chinese, South Asian and East and West Indian youth were less inclined to be smokers. Effect explained by a combination of peer and sibling smoking and acculturation            | Ethnicity based on self-identification. No information about non-responders (17%). Measures of cultural attitudes not included                                      |

**Contraception**

Vulnerability to unintended pregnancy is strongly influenced by access to and effective use of contraception. There is limited information

about contraceptive awareness and use among migrants due to lack of survey data. The HBSC survey (7) is one of the few standardized surveys in the European Region providing comparable data on sexual behaviour in adolescents.

TABLE 3 (CONTINUED)

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: SMOKING |         |                        |   |                                  |   |   |  |
|---|---------|------------------------|---|----------------------------------|---|---|--|
| AUTHORS, YEAR (REF. #)                                    | COUNTRY | STUDY DESIGN           | STUDY POPULATION  | AGE                              | MEASUREMENTS  | RESULTS   | POSSIBLE BIAS/LIMITATIONS  |
| Georgiades et al. 2006 (30)                               | Canada  | Cross-sectional survey | Sample of immigrant and non-immigrant adolescents (n=5 401) | 12-18 years                      | Data drawn from the Ontario Health Survey (self-administered questionnaire)   | Adolescents born outside of Canada report the lowest rated of tobacco use.  | Sample reduced by non-respondents and missing data (29%). Sample too small for sub-group analysis  |
| Stoll et al. 2008 (31)                                    | Canada  | Cross-sectional survey | Immigrant and refugee youth (n=194)                         | Mean 16 years (range not stated) | Self-administered survey (Immigrant and Refugee Youth Tobacco Survey, developed for the study, pilot-tested). Focus groups (25) | Smoking in past 30 days in only 12% of respondents. Non-smoking was associated with non-smoking father, less frequent alcohol consumption and fewer peers who smoke | Age range not stated. Overrepresentation of youth involved with immigrant and refugee servicing agencies (lack of representativeness). Sample included few smokers |

Experience of sexual intercourse in 15-year-olds varies considerably across countries, and use of contraception shows some geographical patterns, the contraceptive pill being used more extensively in Western Europe. Condom use is the most commonly used form of contraception among young people. On a global scale, modern contraceptive use is still largely dependent on socio-economic status (36).

Evidence about unintended teenage pregnancy in migrant young women is scarce. An analysis of national surveillance data in the Netherlands suggests high teenage pregnancy and abortion rates among female asylum seekers, especially among adolescent girls of African and Central and South-eastern Asian origin (37), when compared to the native population. Although this result indicates that teenage pregnancy and abortion may be an issue for adolescent migrants, it cannot be generalised to all migrants.

### Sexually transmitted infections (STIs)

The risk of contracting STIs is influenced by the frequency and type of intercourse, the number of sexual partners, the extent of condom use, sexual violence and the local epidemiology of STIs

(38). The context in which adolescents become sexually active is influenced by family and cultural values and has an important effect on how they are able to protect themselves from STIs. Valid data on STI incidence and prevalence, especially among adolescents and migrants, are still rare. Surveys are usually conducted either among users of specific health services, where adolescents and migrants are underrepresented, or among specific target groups, such as sex workers, resulting in extremely variable reported incidence rates (39). In a population of undocumented female migrants in Switzerland (40), the prevalence of Chlamydia infection was found to be very high (15.2%) among those 25 years or younger, the number of sexual partners being a significant risk factor. As a comparison, the prevalence of *Chlamydia trachomatis* infection ranged from 2.5% to 6.3% in two surveys of US-American white, black and Hispanic adolescents (41, 42).

### HIV/AIDS transmission

Despite growing awareness about effective interventions to prevent HIV transmission among young people, they still make up 45% of new transmissions worldwide (43). Adolescence being

TABLE 4

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: SEXUAL AND REPRODUCTIVE HEALTH |                         |                        |  |             |  |   |   |
|--|-------------------------|------------------------|--|-------------|--|---|---|
| AUTHORS, YEAR (REF. #)   | COUNTRY                 | STUDY DESIGN           | STUDY POPULATION   | AGE         | MEASUREMENTS   | RESULTS   | POSSIBLE BIAS/LIMITATIONS                           |
| Godeau et al. 2008 (32)  | France                  | Cross-sectional survey | School-based sample of female adolescents (n=1 264)                | 15 years    | Data extracted from the HBSC survey 2002   | 17.7% already had sexual intercourse. 88.4% have used condoms and/or the pill at last intercourse. Factors linked to early sex: single-parent family, alcohol use, daily smoking, cannabis experimentation, frequent evenings out, negative life approaches, early menarche | Possible cohort-effect (no comparison group)        |
| Gakidou & Vayena 2008 (33)   | 55 developing countries | Cross-sectional study  | Population from chosen countries                                   |             | Data from demographic and health surveys; wealth indices for each country  | Use of modern contraception by the absolute poor remains low. Gaps in use between the poor and the averages depend on the region but are observed everywhere  | Variable data from different surveys                |
| Goosen et al. 2009 (34)  | The Netherlands         | Cross-sectional study  | All female asylum seekers between Sept 2004 and Aug 2005 (n=9 931) | 15-49 years | Data about induced abortions using notification forms and electronic patient files; population and birth data for asylum seekers | Abortion and teenage pregnancy rate higher than average in The Netherlands. Particularly high among those aged 15-19 years from specific parts of Africa and Asia. Abortion rate decreased with length of stay  | No longitudinal data<br>Limited to official records |

a period of experimentation and risk, it makes young people particularly vulnerable to HIV. Lack of knowledge about HIV, lack of education and life skills, poor access to health services and early sexual initiation are some of the well-known risk factors.

Knowledge about HIV was found to be low among a population of adult Somali and

Sudanese immigrants in Denmark (44), and was positively associated with education. The men in the study population had many negative attitudes towards condom use, whereas knowledge about condoms was very low in women. Beliefs about HIV transmission and lack of utilisation of family planning services were associated with increased

TABLE 4 (CONTINUED)

| CHARACTERISTICS OF PAPERS INCLUDED IN THE REVIEW: SEXUAL AND REPRODUCTIVE HEALTH |  |  |  |                         |   |   |   |
|--|--|--|--|-------------------------|---|---|---|
| AUTHORS, YEAR (REF. #)   | COUNTRY                                  | STUDY DESIGN                                 | STUDY POPULATION   | AGE                     | MEASUREMENTS  | RESULTS   | POSSIBLE BIAS/LIMITATIONS   |
| Datta et al. 2012 (36)   | United States of America                 | Cross-sectional surveys (five 2-year cycles) | Representative population sample (n=15 885)                                      | 14-39 years             | Data from the National Health and Nutrition Examination Survey (1999-2008). Urine specimens collected from participants | Chlamydia prevalence 2.5% among those 14 to 19 years old. Higher prevalence in black persons. Over the years, no change in prevalence in young women (14 to 25 years) | Statistical power may be limited (low prevalence)   |
| Han et al. 2011 (37)   | United States of America (New York City) | Cross-sectional screening study              | School-based sample (voluntary screening) (n=27 353)                             | 14-19 years             | Chlamydia trachomatis and Neisseria gonorrhoea screening; self-administered questionnaire about sexual behaviour        | Screening positive associated with female gender, black race and age of 16 years and over   | Data assessing sexual activity is self-reported. Possible lack of confidentiality. False-positive tests (n=141) |
| Jackson et al. 2010 (38)   | Switzerland                              | Cross-sectional screening study              | Undocumented migrants in a primary health care facility (n=313)                  | 18-50 years (mean 32.4) | Urine screening for Chlamydia trachomatis Self-completed questionnaire  | Chlamydia trachomatis prevalence was 5.8% overall, 15.2% in those aged 25 years or under  | Specific subgroup of migrants (predominantly female and of South American origin). Small sample size            |
| Lazarus et al. 2006 (40)   | Denmark                                  | Cross-sectional survey                       | Somali and Sudanese immigrants arrived since more than one year (n=192)          | 18-49 years             | Questionnaire completed with semi-structured interviews   | Education, gender and nationality, but not length of residence in Denmark, were associated with knowledge about HIV/AIDS  | Specific sub-groups of immigrants (results cannot be generalized)   |
| Dias et al. 2004 (41)  | Portugal                                 | Cross-sectional study                        | Cluster sample of the population living in a migrant community in Lisbon (n=524) | 15 years and above      | Community survey and collective interviews  | The risk for infection may be increased by beliefs, attitudes and knowledge   | Specific context (mostly immigrants from former colonies in Africa)   |
| Dias et al. 2005 (42)  | Portugal                                 | Cross-sectional survey                       | School-based sample of adolescents   | 11-15 years             | Data from the Portuguese HBSC survey 2002, completed with 14 focus groups   | A minority of young people engage in high-risk practices. Young people tend to underestimate their own risk of becoming infected with HIV                             | Social desirability bias in focus group discussions   |

risk for infection among adult African immigrants to Portugal (45). Data from the Portuguese sample of the HBSC survey in 2002, completed with a focus group study, indicate that adolescents generally have good knowledge about HIV transmission, but there is still a high proportion of young people holding misperceptions, thus underestimating their risk of infection (46). However, these results do not provide any specific information about migrants.

## DISCUSSION

Recently arrived adolescent migrants can be seen as a generally healthy population. Rather, it is the migration process and social inequalities in the host countries that make them vulnerable to a number of threats to their physical and mental health.

### Implications for primary care

Primary health care providers may be the only source of medical information for young recently arrived migrants, especially in the context of language difficulties and limited access to media. Topics such as mental or sexual health may not be addressed spontaneously, but can be a source of considerable ill-health and need to be investigated. By detecting such problems early on, primary care providers play a crucial role for prevention and health promotion as well as orientation of the adolescent in the health care system. Networking with other professionals, support by cultural mediators and use of interpreters can help to overcome communication barriers. Young refugees may be particularly vulnerable because of their migration history and the living conditions in the host country, which need to be taken into account when addressing their health issues.

It is important to remember that young migrants represent a heterogeneous population. Each situation needs to be assessed individually, taking into account the country of origin, the reasons for migration and the experiences during the migration process, especially violence or forced displacement. These experiences, as well as the living conditions in the host country, vary greatly between refugees and economic migrants.

### Implications for public health

In order to reach young migrants, health promotion programmes need to be planned in a culturally sensitive way. Interventions based on protective factors, rather than on individual risk factors, allow a comprehensive approach. Family connectedness, cultural values and religious beliefs can be used to effectively address health promotion issues. Family-based interventions have been shown to be effective in decreasing tobacco and alcohol use in young Hispanic migrants in the USA (47). School-based creative workshops for immigrant and refugee children and adolescents have been used to help young immigrants bridge the gap between their culture of origin and the host society and had a beneficial effect of self-esteem, stressing the importance of acknowledging cultural diversity (48). Some preventive programmes need to be adapted to the needs and wishes of minority groups, as has been shown in a pilot project in Austria, reaching Turkish women through a health promotion programme conducted in mosques (49).

### Need for further research

Many topics still need further research. Patterns of cigarette smoking and substance use in young migrants are still largely unknown. Cultural factors and attitudes as well as family support may provide a base on which to build prevention efforts, but information is still scarce. Sexual and reproductive health topics are often not specifically focused on adolescent age groups and precise epidemiologic data is lacking. More qualitative knowledge about cultural aspects is also needed in order to reach young migrants more effectively. Follow-up studies could contribute to our understanding of how post-migration factors determine long-term health and their interaction with acculturation processes.

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