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**Analysis of the Economic Consequences of  
a Country-Wide, School-Based,  
Compulsory and Intracurricular  
Sexuality Education Program in Romania**

submitted on the 31st of May 2017 by Adriana Radu

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## **Abbreviations**

AIDS Acquired immune deficiency syndrome

ARV Antiretroviral

CSE comprehensive sexuality education

DRG Diagnosis Related Groups

ECDC European Centre for Disease Prevention and Control

EU European Union

FFS Fee for service

HIV Human immunodeficiency virus

ICD International Classification of Diseases

LGBT lesbian, gay, bisexual and transgender

NHIF National Health Insurance Fund

NGO Non-Governmental Organization

NIPH National Institute for Public Health

NSPH-MPD National School of Public Health Management and Professional Development

ROC Romanian Orthodox Church

RON Romanian New Leu

RV relative value

SRHR sexual and reproductive health and rights

STI Sexually transmitted infection

WCT weighted case tariff

WHO World Health Organization

## Abstract

Sexuality education is mandatory by law in Romania, but de facto scarce in schools. Romania has the second highest adolescent fertility rate in the European Union, while about 10% of abortions are provided to 15 to 19 year olds. Moreover, Romania has the highest and second highest rate of syphilis cases in 15 to 19 year olds and 20 to 24 year olds, respectively, while also having the highest HIV incidence among 15 to 24 years olds in Europe.

The purpose of this paper was to analyze the consequences of introducing a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania. The core of this study consisted of a modelled cost analysis of four selected sexual health indicators: unintended birth, abortion, syphilis and HIV/AIDS. The two age categories of interest were 15-19 and 20-24 years olds in Romania. Additionally, a national-level sexuality intervention was modeled for Romania, based on the sexuality education program in Estonia. The cost analysis was in part made from the societal perspective and in part from that of the cost-bearers.

Hospital costs and HIV/AIDS national health program costs related to the four sexual health indicators were used to calculate an average cost per case for each type of indicator. By multiplying the average cost per case with the incidences for 2015, the cost in status quo, meaning without a compulsory sexuality education program in Romanian schools, was obtained. Potential savings in medical costs, linked to averted cases of unintended birth, abortion, syphilis and HIV/AIDS in 15-19 and 20-24 year olds were calculated. A best case scenario and a worst case scenario were developed based on the outcomes of the sexuality education program introduced in Estonia. Additionally, the cost of a compulsory national sexuality education intervention in Romanian schools was calculated, also modelled on the Estonian program. The reduced medical cost and the cost of the sexuality education intervention were added to obtain the cost in intervention. Finally, the cost in status quo and the cost in intervention were compared in both scenarios.

In the best case scenario, €668,418 in medical costs would be saved. Furthermore, 180 unintended births, 830 abortions, 22 new syphilis cases and twelve new HIV/AIDS cases in 15-24 year olds would be averted. In the worst case scenario, an investment of €580,584 would be required. However, 90 unintended births, 415 abortions, eleven new syphilis cases and six new HIV/AIDS cases would still be averted.

The results indicate that the cost of a school based compulsory and sexuality education intervention at national level would be compensated through the reductions in medical costs attainable through the intervention. Taking these results into account, in the context of the high need for sexuality education among young people in Romania, the development



and introduction of a compulsory intracurricular sexuality education program in all Romanian schools is recommended.

## Zusammenfassung

Sexuelle Aufklärung ist in Rumänien per Gesetz zwingend vorgeschrieben, jedoch in der Praxis eher selten an Schulen vorzufinden. Rumänien hat die zweithöchste Fertilitätsrate unter Teenagern in der EU und etwa 10 % aller Abtreibungen gehen auf das Konto der 15 - 19 jährigen. Zudem hat Rumänien die höchste Rate an Syphilis-Fällen unter den 15 bis 19 jährigen sowie die zweithöchste unter den 20 bis 24 jährigen. Dem entsprechend ist in Rumänien auch die höchste HIV-Inzidenz in der EU unter den 15 bis 24 jähren zu verzeichnen.

Das Ziel dieser Arbeit war es, die Konsequenzen durch die Einführung eines nationalen verpflichtenden Programms für sexuelle Aufklärung innerhalb des Lehrplans an rumänischen Schulen zu untersuchen. Das Hauptaugenmerk fiel dabei auf eine Kostenanalyse für 4 ausgewählte Indikatoren der sexuellen Gesundheit: ungewollte Geburt, Abtreibung, Syphilis und HIV/AIDS. Die beiden relevanten Altersgruppen waren 15 bis 19 sowie 20 bis 24 jährige in Rumänien. Die landesweite Intervention wurde dabei auf der Basis eines bereits in der Praxis durchgeführten Programms für sexuelle Aufklärung aus Estland entwickelt. Die Kostenanalyse wurde zum Teil aus der gesellschaftlichen Perspektive, zum Teil aus der Kostenträger-Perspektive betrachtet.

Die Krankenhauskosten und die Kosten des nationalen HIV/AIDS Gesundheitsprogrammes bezogen auf die die 4 Indikatoren für sexuelle Gesundheit wurden herangezogen, um die durchschnittlichen Kosten pro Fall für jeden Indikatortyp berechnen zu können. Durch das Multiplizieren der durchschnittlichen Fallkosten mit den Inzidenzen aus dem Jahr 2015 erhielt man die Kosten im Status Quo, was den Kosten ohne eines verpflichteten Programmes für sexuelle Aufklärung an rumänischen Schulen entsprach. Im Anschluss wurden die potentiellen Einsparungen der medizinischen Kosten berechnet, die direkt mit den verhinderten Fällen von ungewollten Geburten, Abtreibung, Syphilis und HIV/AIDS bei 15 bis 19 und 20 bis 24 jährigen verknüpft waren. Hiefür wurden ein Best-Case-Szenario und ein Worst-Case-Szenario der verhinderten Fälle entwickelt, die auf dem estnischen Programm für sexuelle Aufklärung basierten. Zusätzlich wurden die Kosten dieses Programms für sexuelle Aufklärung an rumänischen Schulen berechnet, was ebenfalls aus dem estnischen Programm abgeleitet wurde. Die reduzierten medizinischen Kosten und die Kosten von sexueller Aufklärung wurden addiert um die Gesamtkosten der Intervention zu erhalten. Zum Schluss wurden die anfangs berechneten Kosten im Status Quo mit den Kosten der Intervention für beide Szenarien verglichen.

Im Best-Case-Szenario würden ca. 668,418 € eingespart werden. Zusätzlich würden 180 ungewollte Geburten, 830 Abtreibungen, 22 neue Syphilis Fälle und 12 neue HIV/AIDS Fälle bei den 15 bis 24 jährigen verhindert werden. Im Worst-Case-Szenario wäre ein zusätzlicher Finanzbedarf von 580,584 € erforderlich. Jedoch würden auch in diesem Szenario immerhin

90 ungewollte Geburten, 415 Abtreibungen, 11 neue Syphilis Fälle und 6 neue HIV/AIDS Fälle verhindert werden.

Die Ergebnisse zeigen, dass die Kosten eines landesweiten verpflichtenden Programms für sexuelle Aufklärung an Schulen mit den durch die Intervention erzielten Einsparungen der medizinischen Kosten kompensiert werden. Berücksichtigt man den großen Bedarf an sexueller Aufklärung unter Jugendlichen in Rumänien, wird die Entwicklung und die Einführung eines verpflichtenden Programms für sexuelle Aufklärung innerhalb des Lehrplans an allen rumänischen Schulen empfohlen.

## Statutory Declaration

I declare that I have authored this thesis independently, that I have not used other than the declared sources / resources, and that I have explicitly marked all material which has been quoted either literally or by content from the used sources.

Date

Adriana Radu

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# 1. Introduction

## 1.1. Romania and sexuality education

The importance of sexuality education can be measured by the importance of sexuality for our lives. This is the definition of sexuality, as established by the World Health Organization (WHO) in 2011:

*"Sexuality is a central aspect of being human throughout life and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction. Sexuality is experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviours, practices, roles and relationships. While sexuality can include all of these dimensions, not all of them are always experienced or expressed. Sexuality is influenced by the interaction of biological, psychological, social, economic, political, ethical, legal, historical, religious and spiritual factors."*

WHO Europe, together with the German Federal Center for Health Education has formulated the following definition for sexuality education (2011):

*„Sexuality education means learning about the cognitive, emotional, social, interactive and physical aspects of sexuality. Sexuality education starts early in childhood and progresses through adolescence and adulthood. For children and young people, it aims at supporting and protecting sexual development. It gradually equips and empowers children and young people with information, skills and positive values to understand and enjoy their sexuality, have safe and fulfilling relationships and take responsibility for their own and other people’s sexual health and well-being. It enables them to make choices which enhance the quality of their lives and contribute to a compassionate and just society. All children and young people have the right to have access to age-appropriate sexuality education."*

Sexuality education encompasses the complexity of sexuality itself. Sexuality education tackles the relationship, pleasure, identity, communication and, of course, reproductive aspect of sexuality. Therefore, sexuality education lies at the crossroads between education and health.

### 1.1.1. The proven benefits of sexuality education in young people

Taking into account all the aspects it tackles, as well as its positioning between health and education, it is clear that sexuality education means, first and foremost, prevention.

Sexuality education was first introduced in schools in Western Europe in the 1970s, in the context of the sexual revolution. In this era, modern contraception became available and abortion was legalized in many countries, which in turn made possible the separation between sexuality and reproduction and stimulated women's emancipation. It additionally made way for the development of an intermediate phase in life, between childhood and adulthood: the phase of adolescence. Adolescence meant gradual independence from parents, delaying marriage and having romantic and sexual contacts before marriage. This development, along with the ensuing Human immunodeficiency virus/Acquired immune deficiency syndrome (HIV/AIDS) epidemic, the weakening taboo on sexual violence and sexualization in the media are all reasons that gradually motivated preventive efforts aimed at young people. In Europe, young people have their first sexual contact by age 16 to 18.

They have several partners by the age of 25, when they marry or establish a permanent cohabitation. They have children by the age of 28-30. It is in this time span, from adolescence into adulthood, that young people need to be protected through the preventive efforts of sexuality education (WHO Europe and German Federal Centre for Health Education, 2011).

As a prevention measure, sexuality education has proven benefits. It has been correlated with several hard and soft outcomes. Hard outcomes of sexuality education are the reduction in teenage pregnancies and abortion, decrease in sexually transmitted infections (STIs) among young people aged 15–24 years, decrease in HIV infections among young people aged 15–24 years, decrease in sexual abuse, and decrease in homophobia. Soft outcomes of sexuality education are awareness of human rights, respect, acceptance, tolerance and empathy for others, gender equality, confidence and self-esteem, skills in contraceptive use, empowerment and solidarity, critical thinking, skills in negotiation, decision-making and assertiveness, parent-child communication, sexual pleasure and mutually respectful relationships (UNFPA et al., 2016).

### **1.1.2. Sexual and reproductive rights in Romania**

Following the fall of the communist regime in 1989, Romania joined NATO in 2004 and has been a European Union member state since 2007. In 2015, Romania had a total population of 19.5 Million.

Before 1989. While socialism meant progress in educational and occupational advancement, the concept of women's liberation through work was faulty. More specifically, the hope that once women entered the workforce, men would see women as equal workers, and that this would, in turn, correct patriarchal gender roles, did not always play out as planned. Moreover, women were often faced with a double workload (Penn and Massino, 2009).

Unlike in other socialist countries, there was no strong socialist feminism in Romania to protect women in a more intensified manner (Daskalova and Zimmermann, 2015). This had some consequences in terms of reproductive rights. After the Second World War, in 1948, abortion was banned in Romania, and became punishable by 3 to 5 months in prison. It was legalized again in 1957, but this measure was again reversed in 1966, as Nicolae Ceaușescu came to power. Sex manuals from 1965-1989, the era of Ceaușescu's stay in power, subordinated individual pleasure to the collective significance of the act of reproduction, which was to take place in the heterosexual marital couple (Biebuyck, 2010). This went in line with Ceaușescu's 1966 Decree no. 770 that banned abortion on the grounds that it „is an act which poses serious consequences for a woman's health and because it brings great impairments to the natural population growth”. (Historia, 2014); (Official Gazette of Romania No. 60, 1966). Until 1989, when the Ceaușescu regime fell, over 9,000 women died in Romania because of complications following an illegal abortion (Klingman, 1998). During this time, sexual self-determination and intimate relationships were deeply affected: „For some women, their reproductive organs became an „internal enemy” (Presidential

Commission for the Study of the Communist Dictatorship in Romania, 2006). Consensual same sex relationships have been punishable by law over many decades in Romania. Starting with 1968, same sex relationships, displayed either in private or in public, were punishable by law with up to five years in prison (UNHCR, 1998).

In this climate, there was little state interest in providing young people with sexuality education in schools further than regarding hygiene and anatomy (Rada, 2014).

After 1989. Abortion was decriminalized quickly after the fall of Ceaușescu in 1989. In Romania, women who have reached the age of 16 are now permitted by law to receive an abortion, without any prior counseling, in the first trimester of their pregnancy (Law 95/2006). The morning after pill can be bought in pharmacies without a prescription (European Consortium for Emergency Contraception, 2015). The complete decriminalization of same sex relationships was achieved in Romania in 2001 (UNHCR, 1998).

This is important legal progress in the advancement of sexual and reproductive rights. However, Romania still faces serious issues regarding gender equality and discrimination. In 2012, 30% of Romanian women aged 15 or older experienced physical and sexual violence committed by a partner or a non-partner (FRA European Union Agency for Fundamental Rights, 2012). People living with HIV/AIDS are one of the most discriminated against groups. Discrimination against sexual minorities is still a fact. One out of two Romanians would not sit at the same table with a queer person (Romanian National Council for Combating Discrimination, 2012).

The Romanian Orthodox Church (ROC) went through a period of diminished political power during the communist regime. In order to regain its position post 1989, the ROC has, in its public discourse, tried to equate the Romanian national identity with one's identity as a Christian Orthodox. In other words, being Romanian means being Christian Orthodox. At the same time, the ROC rejected the advancements of human rights in Europe, because of their supposed incompatibility with what it means to be Romanian and Orthodox. In this context, in 2000, the bishop of Transylvania, Bartolomeu Anania, who opposed the decriminalization of same sex relations, was quoted saying: "We want to enter Europe, not Sodom." (Buhuceanu, 2014).

In 2007, when Romania became a EU member state, trust in the European Union was high, at 67% percent (EUROBAROMETER 66, 2007). In the context of the economic crisis, the positive view on the European Union in Romania has seen a certain decrease and reached 59% in 2014 (European Commission, Autumn 2014). Although down by about 7% from 2007 (Eurostat, 2016), Romania's risk of poverty and social exclusion was the highest in the EU in 2014, at 40.2% (Eurostat, 2014).

Romanians' poverty and their growing mistrust in the EU and have been capitalized on by religious conservative and right-wing media and political platforms. In 2016, campaigners



supported by the Romanian Orthodox Church wanted to amend the Romanian Constitution so that it would define marriage strictly as a union between man and woman. Three million Romanians signed the campaign's petition (Balkan Insight, May 2016). As this paper was being finalized in May 2017, the Romanian Parliament was still in the process of reaching a decision regarding the amendment of the Constitution.

Following a similar action in 2016, Marches for Life were organized in 138 cities in Romania and 149 cities in The Republic of Moldova in 2017. The protests, which received support from the ROC and neo-protestant churches such as the Romanian Baptist Church, have taken anti-abortion stances (March for Life Romania, 2017).

2013-2017 has been a period of increased public debate about sexuality education in Romania. Open letters were addressed to the Ministry of Health and the Ministry of Education for and against sexuality education in schools by organizations on each side of the spectrum (Hotnews, 2014b); (Hotnews, 2014a); (Hotnews, 2015).

### **1.1.3. The necessity for sexuality education in Romania**

Moving away from the political climate and issues of discrimination and gender based violence, it is important to look at some hard outcomes.

In Romania, young people become sexually active at the age of 15.5 (UNICEF, 2013). After Bulgaria, Romania has the highest adolescent fertility rate (15 to 19 year olds) in the European Union, three times higher as the European average (The World Bank, 2015). In 2011, 1 in 10 roma girls gave birth to their first child between the age of 12 and 15, and almost half of them between the age of 16 and 18 (Romanian Ministry of Youth and Sport, 2015). In average, around 10% of abortions are being provided for 15 to 19 year olds (Romanian Ministry of Youth and Sport, 2015). 30% of women in Romania between 15 and 49 are not using any type of contraception, while only 51% of them are using modern contraception (Population Reference Bureau, 2008).

In 2014, Romania had the highest rate of confirmed cases of syphilis in 15 to 19 year olds: 9.56/100000 versus the EU/EEA average of 2.10/100000. For 20 to 24 year olds, Romania had the second highest rate: 14.17/100000 versus the EU/EEA average of 7.28/100000 (European Center for Disease Prevention and Control, 2017).

While young people in Romania have basic knowledge of what HIV is, the majority of them do not know enough about ways of transmission and protection (UNICEF, 2013). In 2013, Romania had the highest HIV incidence among 15 to 24 year olds in Europe (IPPF European Network and SECS, 2015).

### **1.1.4. The legal status of sexuality education in Romania**

At international level, Romania signed the Programme of Action adopted at the International Conference on Population and Development Cairo in 1994, which stipulates sexuality education and quality and accessible family planning services for all (UNFPA,

1994). Between 1996 and 2011, the United Nations made many a recommendation to Romania on the topic of sexual and reproductive rights, the most commonly voiced concern being the lack of sexuality education in Romanian schools and for the general population (Euroregional Center for Public Initiatives, 2012). In 2007, the European Center for Disease Prevention also recommended the promotion and strengthening of health education in order to strengthen the control and surveillance of HIV/AIDS and sexually transmitted infections (STIs) (European Center for Disease Prevention and Control, 2012).

National-level documents also tackle the issue of sexuality education in schools, albeit to various degrees.

The Ministry of Health, in its Health Strategy for 2014-2020, sets the strategic objective no 1.2., which aims to reduce the number of teenage pregnancies and abortions. However, sexuality education is only scarcely mentioned, in the frame of a potential – but not yet seen through - collaboration with the Ministry of Education , which would be “aimed to increase the level of knowledge regarding reproductive health in young adolescents” (Romanian Ministry of Health, 2014). The National Strategy for Sexual and Reproductive Health for 2012-2015 has remained a draft, as it was neither officially adopted, nor financed. Objective A1/OG4/OS3 of this draft strategy includes reducing the rate of teenage pregnancies to 10% and defining a minimal knowledge package on reproductive health that should be offered in school, introducing sexuality education teacher training in universities and involving state family planning doctors in sexuality education in schools (Romanian Ministry of Health, 2011).

In its National Youth Strategy 2015-2020, the Romanian Ministry of Youth and Sports sees the high adolescent fertility and abortion rates in adolescents under 19 in Romania as "an alarm signal" and "a special challenge". Through the strategic objectives 3.1. d, e and f, the Ministry commits to promote a sexuality education program for young people, to elaborate a set of measures regarding awareness raising and family planning destined for young people in vulnerable groups and to prevent the HIV/AIDS transmission among young people through the development of programs tailored to the specific needs of vulnerable groups (Romanian Ministry of Youth and Sport, 2015).

Finally, according to article 46 (3) of the Children’s Rights Promotion and Protection Law, “Life education, including sexuality education for children” is *mandatory* in Romanian public schools, having a clear purpose: “prevent their contraction of sexually transmitted diseases and pregnancies among minors” (Law 272/2004 republished 2014).

Sexuality education in schools is therefore mandatory by law and an objective mentioned in national strategies. In spite of this, comprehensive sexuality education is fairly scarce in Romanian schools.

### 1.1.5. The reach of sexuality education in Romanian schools

Intracurricular. The reproductive system and its hygiene are taught in biology class in the 7th grade (Romanian Ministry of Education, 2009). Human genetics is taught in biology in the 10th grade (Romanian Ministry of Education and National Curriculum Council, 2004). Between the 9th and the 12th grade, information on gender equality in the family, domestic violence, sexual exploitation, physical, cognitive and emotional development in adolescence are to be provided by the head class teacher with the help of invited professional guests in the counseling and orientation class ("dirigenție") (Ministry of Education and Research and National Curriculum Council, 2006). Therefore, no information is being provided on contraception, HIV/AIDS and STIs in the compulsory biology and counseling and orientation class.

Another school subject is the non-compulsory Health Education. According to the Romanian Ministry of Education's official reply to a data request, pupils have the possibility to opt-in for this class each year from the 1<sup>st</sup> to the 12<sup>th</sup> grade (Romanian Ministry of Education, 2015). Throughout all twelve grades, this school subject incorporates a chapter on „Reproductive health and family values”. Table 1 shows the coverage of the non-compulsory Health Education subject in Romanian schools. The percentage of pupils choosing Health Education from the list of non-compulsory subjects is low and has become increasingly lower, reaching 5% in 2015/2016 school year. In 2016, during the process of updating the curriculum framework for grades 5<sup>th</sup> to 8<sup>th</sup>, Health Education did not become mandatory, against requests from pupils' representatives (Decât o Revistă, 2016).

School year	Number of schools where Health Education was taught 1 <sup>st</sup> to 12 <sup>th</sup> grade <sup>1</sup>	Total number of schools 1 <sup>st</sup> to 12 <sup>th</sup> grade <sup>2</sup>	Percentage of schools	Number of pupils opting for Health Education <sup>3</sup>	Total pupil population 1 <sup>st</sup> to 12 <sup>th</sup> grade <sup>4</sup>	Percentage of pupils 1 <sup>st</sup> to 12 <sup>th</sup> grade opting for Health Education
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2012/2013	2505	5630	44%	179,358	2,288,569	8%
2013/2014	2201	5648	38%	160,723	2,259,195	7%
2014/2015	2558	5657	45%	157,251	2,221,194	7%
2015/2016	2134	5638	38%	110,957	2,184,416	5%

**Table 1: The coverage of the non-compulsory Health Education subject in Romanian schools.**

<sup>1,3</sup> Data provided by the Ministry of Education through an official reply to a data request in September 2016.

<sup>2</sup>Data actually provided per calendar year: 2012, 2013, 2014 and 2015, not per school year. Source: The Romanian National Institute for Statistics, SCL101C - Unitatile scolare pe niveluri de educatie, judete si localitati. The numbers result from adding up 1st to 8th grade schools, high schools and vocational schools.

<sup>4</sup>Data actually provided per calendar year: 2012, 2013, 2014 and 2015, not per school year. Data provided per age: 7 to 18 year olds, that matches grades in Romania: 1st graders are normally 7 at the beginning of the school year, 12th graders are 18. Source: The Romanian National Institute for Statistics, SCL103A - Populatia scolara pe niveluri de educatie, varste scolare si sex.

Extracurricular. According to the Ministry of Health, 220.000 pupils in 1<sup>st</sup> grade to 12<sup>th</sup> grade, meaning around 10% of Romanian pupils, were informed on sexuality education topics through extracurricular activities in the 2011/2012 school year (Gândul, 2013).

In Romania, The National Centre for Evaluation and Promotion of Health Status is responsible for the coordination of the national Health Promotion Network. Among other tasks, the network researches health promotion priorities and organizes health promotion campaigns, such as World AIDS Day. Through the 42 District Public Health Departments, the network undertakes campaigns for HIV/STI prevention and provides school-based sex education (European Center for Disease Prevention and Control, 2012).

Moreover, there are several non-governmental organizations (NGOs) and initiatives providing sexuality education in Romanian schools. The best-known organizations and initiatives to provide sexuality education on a local, regional and national level are: SECS (Society for Contraceptive and Sexuality Education, the Romanian International Planned Parenthood Federation member organization), Tineri pentru Tineri (Youth for Youth), Alături de voi (By your side), Fundația Baylor (Baylor Foundation), Salvați copiii (Save the Children Romania), Population Services International, Semper Musica, SEXUL vs BARZA (SEX vs The Stork).

However, since Romania has not adopted a clear definition for sexuality education, neither have specialized organizations established a common quality agreement. Therefore, there is no information with regard to the quality standard, content and length of these sexuality education classes, workshops or events.

Conservative organizations are also active in Romanian schools. One such organization is Pro Vita pentru născuți și nenăscuți (Pro vita for the born and the unborn). They are pro-life, meaning against abortion, and promote abstinence (Provita, 2017) through "alternative programs for the premarital and marital education of young people, young married couples and parents" (Accredited NGO List Chamber of Deputies Romanian Parliament, 2017).

## **1.2. Estonia and sexuality education**

The history of sexuality education is different throughout Europe. Compared to Western countries, Central and Eastern European countries have had a separate development of their own and 20 to 30 years delay in introducing sexuality education in schools. From the Central and Eastern European countries formally under a communist regime, only the Czech Republic and Estonia have developed modern sexuality education programs (WHO Europe and German Federal Centre for Health Education, 2011). Out of these two countries which, due to their social-economic background, one may deem comparable to Romania, it is the country-Wide, school-Based, compulsory and intracurricular sexuality education program in Estonia that has been carefully documented. It was most notably done so in the 2011 UNESCO study called „School-Based Sexuality Education Programmes, A Cost and Cost-Effectiveness Analysis in six countries”, called from now on the UNESCO 2011 Estonia Study. This study outlines the sexuality education program introduced in Estonia, measures its impact, calculates its costs and analysis the extent to which it was cost effective (UNESCO, 2011).

The Estonian model, as it was documented in the UNESCO 2011 Estonia Study, is an important part of answering this paper’s research question.

## **1.3. Financing of health care in Romania**

Health care expenditure. In 2012, Romania allocated 7,185 Million Euro to its health budget. This represents 5.5% of its GDP. 5.5% is also the average percentage of GDP allocated to health in Romania in the last 10 years (Eurostat, 2012b). It is the lowest allocation percentage among European Union countries (Eurostat, 2012a). Moreover, Romania has the lowest health care expenditure per capita in the EU, around 10 times lower than Western European countries.

Revenue Collection and Pooling. The health system has both compulsory and voluntary elements of finance. However, since 1998, the most important source of financing has been social insurance (Olsavszky and Butu, 2009 ). Social security fund accounted for 67% of health system financing in Romania in 2012, followed by 19.5% from private out-of-pocket expenditure and 12.1% from taxes. A mere 0.2% came from private insurance enterprises, 0,3% from corporations other than health insurance and 0,1% from non-profit institutions serving households (Eurostat, 2012c).

The social insurance contribution is collected in the National Unique Social Health Insurance Fund, managed by the National Health Insurance Fund (NHIF). The collecting is done by the Ministry of Public Finance through the National Fiscal Administration Agency and its subordinate institutions (Romanian Government Ordonance nr. 92/2003 Code of Fiscal Procedure, 2003). As per Art. 258 and 259 (Health Reform Law 95/2006), the main contributors are employees (5.2% of income), employers (10.7%) and other categories, such as freelancers/the self-employed and pensioners who receive more than 233 Euro/month (5.5%).

Taxes are collected through the Ministry of Public Finance and redirected to the Ministry of Health. The revenue from the alcohol and the tobacco tax – the so-called “vice tax” - is earmarked for the health budget (Health Reform Law 95/2006). The tax revenue money is partly used for the financing of national health programs related to, for example, HIV-AIDS, TB or cardiovascular diseases, through different specialized state institutions.

Social health insurance is compulsory for all citizens of Romania, as well as for foreigners or stateless persons residing in Romania, as per Art. 211 (Health Reform Law 95/2006). Each insured person is entitled to the basic health care package. This includes a broad range of services: hospital care, prescription drugs, dental care, paraclinical investigations, medical and palliative home care, rehabilitation (including in sanatoriums and balneal sanatoriums), ambulatory care. To access ambulatory services, the insured must be registered with a family doctor (Framework Contract, 2016-2017).

Births, and to some extent, pre and post natal consultations are free of charge both for the insured and the uninsured. As per Article 248, paragraph 1 (Health Reform Law 95/2006), per request abortions are an out of pocket service in Romania.

Allocation. According to Art. 229 (Health Reform Law 95/2006), the benefits and conditions that come with the social insurance, but also payment mechanisms are established through the so-called Framework Contract. This document is elaborated periodically by the NHIF and it must be approved by the Ministry of Health and ratified through a Government Ordinance. Tied to each Framework Contract is a document called “The Application Norms of the Framework Contract” which is a Common Order signed by the president of the NHIH and the Minister of Health (Vlădescu et al., 2016). This document includes a detailed outline of benefits. It also includes an outline of which services are paid by tariffs in the fee for service (FFS) model and which procedures are paid through the Diagnosis Related Groups (DRG) system.

In primary care, physicians are business owners who receive payments through a combination of weighted capitation and FFS. In ambulatory care, specialists who have their own practice and have a contract with the District Health Insurance Funds are paid through FFS. Specialists who are working in the ambulatory section of a hospital are employees of that hospital and receive a salary. As for hospitals, they function through a mix of payment methods (Vlădescu et al., 2016). This mix is made up of: DRGs, case payments, day tariffs, a lump sum dedicated to the curative national public health programs (covering drugs and medical supplies) and FFS payment for services provided by outpatient departments (Vlădescu et al., 2016).

Introduced successively between 1997 and 2002, the DRG system was implemented nationally in 2003 for continuous acute inpatient cases. Several international classifications were used until 2010, when the Romanian system, “RODRGv1”, based on the Australian DRG system, was created.

Separately from the DRG tariffs, there are specific tariffs for day surgery and day care. Day care is defined in the Framework Contract as being either cases which need medical supervision for a maximal of 12 hours, day surgery with discharge on the same day and cases that need daily contact (for example, for diagnosis, monitoring and treatment) that does not exceed 12 hours per contact (Vlădescu et al., 2016). Among the most frequent five health care services provided on a day care basis is the monitoring of HIV/AIDS patients, which is a health service the present paper looks at (Vlădescu et al., 2016).

For DRGs, case payments, day services, data collection and validation is performed by the National School of Public Health Management and Professional Development (NSPH-MPD).

On top of that, some hospitals receive funds for services they provide as a part of national health programs ran by the Ministry of Health and the DPHAs. Therefore, smaller databases related to these programs also exist.

## **2. Research question**

What are the economic consequences of introducing a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania?

## **3. Methodology**

### **3.1. Study design**

The core of this study consists of a modeled cost analysis of four selected sexual health indicators: unintended birth, abortion, syphilis, HIV/AIDS. The two age categories of interest are 15-19 and 20-24 years olds in Romania. Additionally, a sexuality intervention was modeled for Romania based on the country-wide, school-based, compulsory and intracurricular sexuality education program in Estonia. Background information on the Estonian Model is given in chapter 3.2. The six methodological steps of the study are documented in the chapters 3.3 through 3.8.

The study strives to address the societal perspective, especially in view of its analysis of the costs linked to a potential compulsory sexuality education intervention in Romanian schools. However, in calculating the costs related to the four selected sexual health indicators (unintended birth, abortion, syphilis, HIV/AIDS), the perspective is narrowed to that of the cost bearers.

### **3.2. The Estonian model**

As the only Central and Eastern European country with a well-documented sexuality education intervention, the country-wide, school-based, compulsory and intracurricular sexuality education program in Estonia was chosen as a model, in order to answer this paper's research question. On the one hand, the reduction rates observed for the sexual health indicators selected for the UNESCO 2011 Estonia Study study were applied on the

incidences in Romania in 2015. On the other hand, the costs of a potential sexuality education intervention in Romania were modeled on the cost structure of the Estonia intervention.

In short, a sexuality education program was introduced in Estonia in the 1991 as a non-compulsory subject. In 1996, as a new national curriculum was decided upon, the school subject Human Studies, which included sexuality education, became mandatory. In this way, each Estonian pupil receives 24 hours of sexuality education over the course of three school years, namely in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade. The UNESCO 2011 Estonia Study established the year 2001 as the starting point from which they can rightfully link the sexuality education intervention with reductions in their selected sexual health indicators. The observed reduction period is 2001 to 2009.

According to the cost-effectiveness analysis, if the sexuality education program introduced in Estonia were to avert only 4% of the observed reductions in HIV that were attributed to the program (meaning 83 out of the 1,970), the costs related to the averted HIV treatment need would equal already equal the total cost of the program. Therefore, they did not need to include the healthcare cost of averted abortions, unintended pregnancies and other STIs or other non-health outcomes in the cost effectiveness analysis. Table 2 shows the cost effectiveness of the sexuality education intervention in Estonia (UNESCO, 2011).

Results in the UNESCO 2011 Estonia Study were documented in US dollars. In order to work with a unified currency, US dollar costs were transformed in costs in Euro. The exchange rate established in December 2016 is: 1.05 \$ = 1 00€.

2001-2009 Estonia (UNESCO, 2011)			
(b) Observed reduction in no. of HIV infections in Estonia (2001-2009)	(c) Discounted Lifetime treatment costs per HIV infection	(a) Program costs 1991-2009 € 5.3 Mio.	
		(e) No. of averted HIV infections equal to program cost (a)/(c)	Required impact to make sexuality education cost-saving (e)/(b)
1,970	64,595 €	83	4%

**Table 2: Cost effectiveness of the Estonia Sexuality education Program**

### 3.3. Step 1: Epidemiological Status Quo for unintended birth, abortion, syphilis and HIV/AIDS

The first step in the cost analysis was obtaining the 2015 incidences for each of the four chosen sexual health indicators, namely birth, abortion, syphilis and HIV/AIDS, for the age groups 15-19 and 20-24 year olds. The total incidences were also obtained as an informative basis of comparison. To obtain the incidences, the data sources listed in Table 3 were consulted:

Sexual health indicator	Data Source
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<b>Unintended birth</b>	Eurostat, Live births by mother's age and birth order [demo_fordagec], Last update status: 23-02-2017.
<b>Abortion</b>	Eurostat, Legally induced abortions by mother's age [demo_fabort], Last update status: 23-02-2017.
<b>Syphilis</b>	Romania National Institute of Public Health. The data was provided 2016.09.2016 following on official data request.
<b>HIV/AIDS</b>	The Evolution of HIV/AIDS infection in Romania 31 December 2015, Compartment for Monitoring and Evaluation of HIV/AIDS in Romania, National Institute for Infectious Diseases "Prof. Dr. Matei Bals", p. 18.

**Table 3: Data Sources Epidemiological Status Quo**

### **3.4. Step 2: Calculation of costs related to unwanted incidences of birth, abortion, syphilis and HIV/AIDS**

The second step in the cost analysis was calculating the average cost per case for each of the four chosen sexual health indicators – unintended birth, abortion, syphilis and HIV/AIDS.

For this part of the cost analysis, hospital data (DRG and FFS) were provided by the Romanian National School of Public Health Management and Professional Development (NSPH-MPD), which provides the hospital data collection and validation nationally. This data was combined with legislation currently in force which establishes hospitals DRG and FFS prices for the year 2015. The core documents which were consulted were the two versions of The Application Norms of the Framework Contract (Application Norms of the Framework Contract 2014-2015 Romanian Government Order 619/30.05.2014); (Application Norms of the Framework Contract 2015 Romanian Government Order 388/186/2015). Help with understanding the legislation regulating cost-building for the four sexual health indicators of interest was provided by the NHIF following an official request (National Health Insurance Fund, 2016).

Data for HIV/AIDS included not only hospital data, but also data regarding the treatment and testing costs covered by the National Program for Prevention, Monitoring and Control of HIV/AIDS Infection. This data was provided by National Institute for Infectious Diseases “Prof. Dr. Matei Balș” through the National Compartment for Monitoring and Evaluation of HIV Data in Romania. Unavailable data on treatment and testing costs was approximated by consulting costs outlined in the Approval of Technical Norms of implementation of the national public health programs for the years 2015 and 2016 (Romanian Ministry of Health Order no. 386/31 March 2015).

Depending on the different type of cost data available, a separate cost calculation methodology was developed for each type of sexual health indicator, using the data sources available. Hospital data and data from the National HIV/AIDS Program were combined with data from the aforementioned in force legislation which regulates prices for 2015. The methodology also entailed steps to define calculation assumptions in order to obtain an average cost per case.

From the aforementioned data sources, hospital data were the most complex to tackle. They are also a part of the cost calculation for each of the four chosen sexual health indicators. The basic steps in the calculation methodology for costs related to DRGs and medical services offered on a FFS basis, as well as the form in which the DRG and FFS data sets were delivered are briefly documented in Chapter 7.1 and 7.2 in the Appendix.

For all cost categories and from all data sources, costs were obtained in the Romanian national currency. In order to work with a unified currency, Romanian New Leu (RON) costs were transformed in costs in Euro. The exchange rate established in December 2016 is: 4.54 RON = 1.00 €.

#### **3.4.1. Unintended birth average cost per case**

The average price per unintended birth case per age category in the year 2015 was calculated on the basis of DRG data. Several steps were taken to reach this birth average cost per case.

Data on all the DRGs in the Major Diagnostic Category 14, related to Pregnancy, Birth and Childbed, reported for each hospital in the RODRGv1 system, in 2015 were obtained. From all the DRGs in this category, only the 8 DRGs related to birth were selected for the calculation.

These DRGs are: *O1011 C-section birth with catastrophic complications, O1012 C-section birth with severe complications, O1013 C-section birth without catastrophic or severe complications, O1021 Vaginal birth with procedures in the operating room with catastrophic or severe complications, O1022 Vaginal birth with procedures in the operating room without catastrophic or severe complications, O3011 Vaginal birth with catastrophic or severe complications, O3012 Vaginal birth without catastrophic or severe complications, O3013 Singular vaginal birth without complications or other affections.*

From these 8 different types of exclusively birth related DRGs, the number of DRG cases was added up for each age group (total, 15-19, 20-24). Then, the total DRG cost was built for each age group by consulting in force legislation regulating costs. By dividing the total DRG costs with the total number of DRG cases, an average cost per DRG case was built for each age group.

The average cost per DRG birth case is therefore here defined to be the average case per birth.

For a detailed overview please see the Birth Table 17 in Chapter 7.3.1. In the Appendix.

Respecting the methodology in the UNESCO 2011 Estonia Study, births related to 20-24 year olds were not included in further calculations. Therefore, only births that occurred in the 15-19 age group are considered to be unintended.

### 3.4.2. Abortion average cost per case

The average price per abortion case per age category in the year 2015 was calculated by using two types of data: DRGs and FFS.

*DRGs.* From the aforementioned obtained data in the Major Diagnostic Category 14, related to Pregnancy, Birth and Childbed, reported for each hospital in the RODRGv1 system in 2015, only the two DRGs related to abortion were selected. These DRGs are: *O1050 Abortion with procedures in the operation room* and *O3030 Abortion without procedures in the operation room*.

*FFS.* There was one service related to abortion for which data was available: *Birth interruption with medical recommendation under 12 weeks*.

From these 2 different types of exclusively abortion related DRGs, the number of DRG cases was added up for each age group (total, 15-19 and 20-24). The FFS cases were also added. There were 15,540 abortions performed in Romanian hospitals in 2015. 92% of them required procedures in the operation room (DRG O1050). In the FFS category, there were only 26 birth interruptions with medical recommendation under 12 weeks registered in 2015.

Then, the total cost (DRG cost plus the rather small FFS cost) was built for each age group.

By dividing the total DRG+FFS cost by the total number of DRG+FFS cases, an average cost per in hospital abortion case was built for each age group. This average cost for in hospital abortion case was applied for the 15,540 abortions registered as performed in hospitals in Romania in 2015.

However, Eurostat incidence data show that there were a total of 70,885 abortions performed legally in Romania in 2015. Therefore, 55,345 abortions were not performed in a hospital, but, for example, in private practices, per request. In order to calculate costs for the difference of 55,345 cases, each of these 55,345 abortion cases was assigned the average cost of the *DRG O3030, Abortion without procedures in the operation room*. The working assumption for this choice is that per request abortions do not usually imply complications that require an operation room, so the cost per abortion outside hospitals would be close to the cost of DRG O3030. Furthermore, it was assumed that cases that would lead to complications would eventually go to hospital and be registered under the *DRG O1050 Abortion with procedures in the operation room*. This assumption is, however, a conservative one, given that pricing for per request abortions can vary as an out of pocket service on the Romanian market.

The average cost for the O3030, Abortion without procedures in the operation room was calculated as already explained for birth cases. The number of O3030 DRG cases was added up for each age group (total, 15-19 and 20-24). Then the total costs for the O3030 DRG was built for each age group by consulting in force legislation regulating costs. By dividing the

total DRG O3030 costs with the total number of DRG O3030 cases, an average cost for O3030 DRG case was built for each age group. This is therefore the average cost for the out of hospital abortion case. The average cost for the out of hospital abortion case was applied for the difference of 55,345 abortions registered by Eurostat. By multiplying this with the numbers of out of hospital abortion cases, the total costs for out of hospital abortion cases per age group was obtained.

The *total costs for in hospital abortion cases (DRG+FFS)* were added to the extrapolated *total costs of out of hospital abortion cases*, resulting in total abortion costs. The total abortion costs were divided by the total absolute number of abortions as reported by Eurostat. Therefore, the average abortion case cost per age group was obtained.

For a detailed overview please see the Table 18 in Chapter 7.3.2 in the Appendix.

### **3.4.3. Syphilis average cost per case**

The average price per syphilis case per age category in the year 2015 was calculated by using different type of data and by following the several working assumptions listed below.

For syphilis, DRG data were firstly obtained. More specifically, data was obtained regarding all DRG cases which had, as a primary or secondary diagnosis, the following International Classification of Diseases (ICD) codes related to syphilis: A50, A51, A52 and A53.

These included congenital syphilis, so, as a first step, the DRGs related to infants were eliminated. What remained were 1835 adult syphilis related DRG cases. As for birth and abortion, the total DRG cost for each age group was divided by the total number of DRG cases per age group. Following this, the average cost per syphilis DRG case per age group was obtained.

However, given the nature of syphilis, doing the calculation alone is not sufficient. Moreover, there are some limitations regarding the available data on syphilis.

First, unlike births, for example, one cannot assume that each of the 1835 DRG cases represented separate patients. Because data was solely requested per DRG case, matching cases to patients was not possible. On further consultation with the data provider, The NSPH-MPD, the conclusion was reached that the data should have been requested per patient, not per DRG case. This way, one could have correctly linked all syphilis costs related to each patient based on patients' anonymized social security number. Incidence data from the Romanian National Institute of Public Health confirms this: there were 949 new syphilis patients in 2015 in Romania vs. the 1835 DRG reported syphilis cases in the Romanian hospital system.

Second, there was another type of hospital data on syphilis that was omitted from the data request. That is a service (FFS) called "Monitoring of primary genital syphilis and of secondary skin and mucous syphilis". As explained by the NHIH, this service is the one

usually booked in the diagnosis and treatment of new patients (National Health Insurance Fund, 2016).

In order to take these limitations into account, it was assumed that each of the reported 949 new syphilis cases would be diagnosed and monitored for one trimester, so it would be assigned with the cost of 1 trimester of the service „Monitoring of primary genital syphilis and of secondary skin and mucous syphilis.” On top of that, each new patient was assigned with the equivalent cost of one average syphilis DRG case.

Therefore, the average DRG cost (different cost per age group) was summed with the cost of the one semester monitoring (same cost for all age groups) to obtain the an average cost per syphilis case per age group.

The assumptions for syphilis are, of course, approximated, and should be viewed as a limitation, especially since it is rather difficult to tell if the assumption is conservative or generous. However, it is important to note that the costs related to syphilis make up a very small part of the total sexual health indicators costs, so the assumptions made here have a very small impact on the calculation results. For a detailed overview please see the Table 19 in Chapter 7.3.3 in the Appendix.

#### **3.4.4. HIV/AIDS average lifetime cost per case**

The average lifetime cost per new HIV/AIDS case was calculated using three types of data: DRGs, FFS and data from the National HIV/AIDS program.

Opposed to birth, abortion and syphilis, new HIV/AIDS cases must be viewed in their lifetime cost dimension, as HIV is to this day incurable. Therefore, an average lifetime cost per new HIV/AIDS case in Romania was built.

Another important note is that not only new HIV cases are diagnosed in Romania, but also directly new AIDS cases. It is both new HIV and new AIDS cases that are being included in this analysis.

*DRGs.* From the Major Diagnostic Category 14 on Infectious and parasitary diseases, data on the existing small set of HIV-related DRGs were obtained. These DRGs are: *S3010 Day HIV, S3021 HIV connected diseases with catastrophic consequences, S3022 HIV connected diseases with severe consequences, and S3023 HIV connected diseases with neither catastrophic nor severe consequences.* As for birth, abortion and syphilis, by dividing the total DRG costs for each age group by the total number of DRG cases per age group, the average cost per HIV DRG case per age group was obtained.

*FFS.* In the hospital day care system, the NHIH reimburses the *Monitoring of HIV/AIDS patients* and also the *Dynamic viro-immunology response evaluation* through an established maximal tariff per service.

There are 2 limitations in the HIV/AIDS FFS data set.

First, the service *Dynamic viro-immunology response evaluation* was omitted from the data request, so the cost related to this service could not be included in the cost calculation.

Second, the data for the service *Monitoring of HIV/AIDS patients* are incomplete. Hospital services are documented on a hospital observation chart. Once such an observation chart is officially closed, the hospital is reimbursed for the service it delivered. In the case of the service *Monitoring of HIV/AIDS patients*, the observation chart can remain open for several months, depending how long the monitoring lasts for the respective patient. So, for the service *Monitoring of HIV/AIDS patients*, the tariff is not only established per patient, but also per month, because one patient can receive the monitoring service, documented in one observation chart, during several months. Since only the hospital release month is available in the data set, and the hospital intake month is not available, there is no way of knowing how many months an observation chart remained opened, meaning how many months one service was provided for one patient. The solution was therefore to assume that each one observation chart remained open for one month, so the duration of each service was one month. Therefore, the average HIV/AIDS FFS cost is the cost for one month the service *Monitoring of HIV/AIDS patients*. This is a conservative assumption, given that each monitoring service could have lasted longer and thus entailed higher costs. Moreover, the *Monitoring of HIV/AIDS patients*, as previously explained, among the most frequent five health care services provided on a day care basis, (Viădescu et al., 2016), so it would have been interesting to see exactly how high a cost it actually entails.

To sum up, these two limitations mean that the real FFS cost related to HIV/AIDS would be higher.

*Data from the National HIV/AIDS Program.* DRG and FFS costs related to HIV do not include costs related to HIV/AIDS drugs. The latter, among other costs, are covered by the National Prevention, Monitoring and Control of the HIV/AIDS infection program (National Health Insurance Fund, 2016).

More specifically, there are six evaluation indicators of the National Program for Prevention, Monitoring and Control of HIV/AIDS Infection, reflecting six categories of costs.

According to Chapter I.3.E. (Public Health Programs Technical Norms 2015-2016), they are: 1) the number of rapid HIV tests, 2) the number of ELISA HIV 1+2 test, 3) the number of post exposure ART prophylaxis, 4) the number of HIV/AIDS patients receiving ART treatment, 5) the number of HIV/AIDS patients receiving non-ART prophylaxis and 6) the number of ART genotypic resistance tests.

Data on the 2015 costs for indicators 1) to 4) were provided by the National Institute for Infectious Diseases “Prof. Dr. Matei Balș”. The official reply from the Balș Institute outlined the fact that data for indicators 5) and 6) could not be provided, as funds for these two indicators were not allocated through the national HIV/AIDS program in 2015, but were supported at hospital level. Nevertheless, approximate costs for indicators 5) and 6) are

mentioned in the Public Health Programs Technical Norms 2015-2016. Thus, the cost for indicators 5) and 6) could be extrapolated.

Several assumptions were made in order to calculate the average lifetime cost per new HIV/AIDS cost. To begin with, since the average lifetime cost supposed in the Estonia study is 32 years (UNESCO, 2011), this is the average lifetime span for people living with HIV/AIDS which was chosen for this model. Next, all the mapped cost elements –DRG, FFS, and the six indicators- were considered in order to reach the lifetime cost.

In the first of the 32 years, the cost per HIV/AIDS patient is made up of: 1 x ART post-exposure prophylaxis, 1 x Rapid Test, 1 x ELISA Test, 1 x ART genotypic resistance tests, 1 x ART treatment for HIV/AIDS patients per year, 1 x 1 month monitoring. The cost for the next 30 years is solely made up of the cost for ART treatment. The cost for the 32<sup>nd</sup> year is made up of: 1 x ART treatment for HIV/AIDS patients per year, 1 x 1 month monitoring and 1 x DRG average. This is viewed as a conservative assumption, given that, for example, a person living with HIV/AIDS may require more than 2 months of monitoring over the course of a lifetime.

Since we are talking about lifetime costs, the per case cost differences that appear between age groups when looking at the costs per year were ignored. In the calculation, it was established that the average lifetime cost per patient for all age groups is the average lifetime cost per patient for the “total” age group. By multiplying this number with the number of new HIV/AIDS cases per age group, the total lifetime costs that result from new HIV/AIDS cases in 2015 were obtained. This, again, is a conservative value, as international literature shows higher average lifetime costs (e.g. UK, 2015, €246,000 discounted lifetime costs (Nakagawa F. et al., 2015) ).

For a detailed overview please see Table 20 in Chapter 7.3.4 of the Appendix.

### **3.5. Step 3: National total Cost per year for incidences of birth, abortion, syphilis and HIV/AIDS**

The national total cost for each sexual health indicator was obtained by multiplying the number of new cases in 2015 for that health indicator with the average cost per case for each of the two age groups (15 to 19 and 20 to 24 year olds). The total costs for each age group was obtained by adding the total costs of each of the sexual health indicator in the age group. For 15 to 19 year olds, that includes birth, abortion, syphilis and HIV/AIDS. For 20 to 24 year olds, the costs related to birth were excluded in order to respect the methodology of UNESCO 2011 Estonia Study (UNESCO, 2011). By adding the total costs for the two age groups, the national total cost linked to all incidences of unintended birth, abortion, syphilis and HIV/AIDS that occurred in 2015 was obtained. This total cost includes cost per year for unintended birth, syphilis and HIV/AIDS and the 32 years lifetime costs for each new HIV/AIDS case.

Exact values were always used in the calculations. The costs listed in the paper are rounded, that is why minimal variations may appear.

### 3.6. Step 4: Case and cost reductions in case of a sexuality education intervention in Romania

#### 3.6.1. Reduction rates through sexuality education

When calculating potential averted costs due to the introduction of a sexuality education program in schools, these averted costs are actually linked to averted cases of births, abortions, syphilis and HIV/AIDS cases. Since in the paper, the sexuality education intervention in Romania was modeled on the Estonian intervention, the observed reduction rates of the four selected sexual health indicators from Estonia were obtained.

According to the Estonian model (UNESCO, 2011), the sexuality education program started in Estonia in 1991 and became mandatory in schools in 1996. From the vantage point of 2009, the authors of the cost and cost-effectiveness analysis state that only improvements of sexual health indicators starting with the year 2001 are “likely to be due to the introduction of sexuality education in combination with youth-friendly sexual health service delivery”.

Therefore, the length of the intervention in Estonia was 19 years (1991 to 2009), with 9 years when the intervention provided outcomes (2001 to 2009). Table 4 lists the sexual health indicators reduction rates achieved through sexuality education that were observed in Estonia over the course of 9 years. Reductions for birth in the age category 20 to 24 year olds were not included (UNESCO, 2011). Thus, only births that occurred in age group 15-19 are considered to be unintended.

Sexual health indicator	Reduction 100% Estonia Model in 9 years	
	15 to 19 year olds	20 to 24 year olds
Unintended Birth	9%	-
Abortion	30%	42%
Syphilis	95%	96%
HIV/AIDS	72%	96%

**Table 4: Sexual health indicators reduction rates due to sexuality education in 9 years in Estonia**

Best case scenario reduction. Since in this paper all calculations were made per year, the per nine year reductions listed above were divided by nine to obtain the reduction rates per one year due to a sexuality education intervention, for each of the four sexuality education indicators. The obtained results were defined as the per year reduction in the Best Case Scenario, in which the reductions observed in Estonia are fully, to 100%, applied.



Worst case scenario reduction. The sexuality education program in Estonia exists alongside Youth Counseling Centers, which were also developed in the 1990s. They provide STI, safer sex and family planning counseling, but also testing and treatment for young people. Moreover, the Youth Counseling Centers staff support teachers in delivering sexuality education lessons and inform pupils about the Centers.

The services offered by the Youth Counseling Centers, which were provided together with sexuality education, were not included in cost-effectiveness analysis. However, the study on Estonia states that the impact of sexuality education in schools cannot be statistically separated from the impact of the introduction of the aforementioned Youth Counseling Centers (UNESCO, 2011). Therefore the introduction of a sexuality education program alone might not automatically bring forth the results in the best case scenario. Thus, a worst case scenario was also developed, defined as only 50% of the per year reductions that occurred through the Estonian Model.

### **3.6.2. Averted cases**

By applying the per year reduction rates – 100% Estonia for the Best case scenario and 50% Estonia for the worst case scenario - the number of averted cases in both scenarios was calculated.

### **3.6.3. Averted costs**

By multiplying the number of averted cases with the average costs per case, the averted costs in the best case and in the worst case scenario, based on the current incidence, were obtained.

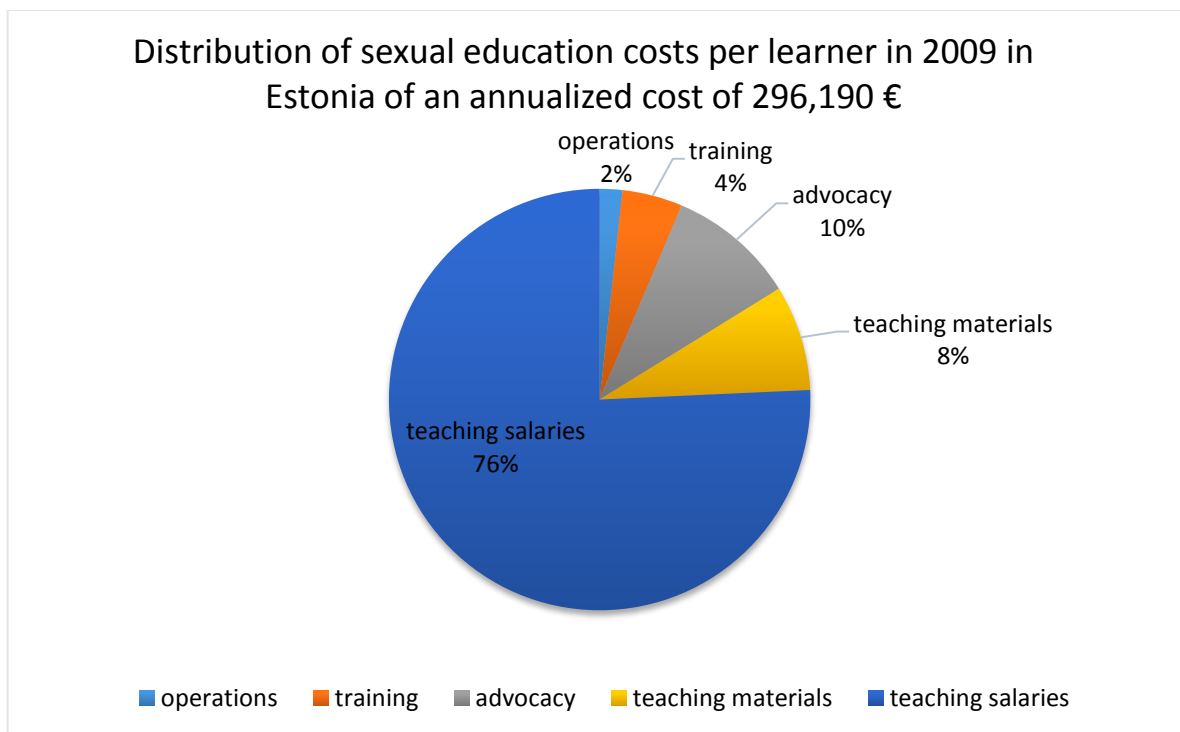
## **3.7. Step 5: Calculating the cost of a sexuality education intervention in Romania based on the Estonian Model**

The reduction rates observed in Estonia were applied on the costs calculated for Romania.

Therefore, the proposal for a sexuality education intervention in Romania was also modeled on the sexuality education intervention introduced in Estonian schools. In calculating the costs of a potential sexuality education program in Romania based on the Estonia model, the steps documented below were taken.

First, the cost per learner per year in Estonia and the total cost per year for the sexuality education program in Estonia were obtained from the UNESCO 2011 Estonia Study (UNESCO, 2011).

Second, the outline of the implementation costs for the Estonian intervention was obtained. The sexuality education intervention cost categories are comprised by operations, trainings, advocacy, teaching materials, teaching salaries (UNESCO, 2011). Their distribution can be seen in the Figure 1 below.



**Figure 1: Distribution of sexuality education costs per learner per year in Estonia**

Third, the cost per year per learner was calculated for Romania. In order to achieve that, some reductions were applied to the costs outlined for Estonia.

To begin, the average teachers' salary in Romania represents 32% of the Estonian average teachers' salary (European Commission, 2014). So a 68% reduction was applied to Estonian teachers' salaries costs to calculate those in Romania. Moreover, the costs of teachers' salaries were once again reduced by an additional 28% since the average classroom in Romania is 25 learners (Romanian Government Decision No. 9/2015 to amend Decision No. 72/2013), while the average classroom in Estonia comprises 18 learners (UNESCO, 2011). Secondly, the 68% reduction was applied to the other types of implementation costs: operations, training and advocacy. This difference is based on the fact that, just like teachers' salaries, these other three cost types also mainly imply salaries and also imply teaching activities, especially for training and advocacy.

The costs for teaching materials stayed the same. As a result, the implementation costs for the Romanian intervention are reduced compared to the Estonian model, while the implementation cost proportions differ to some extent.

After these reductions were applied for each cost category, the resulted costs were added to make up a working total cost for Romania per year. (This total cost for Romania per year is just a working value based on the learner population of Estonia, so not the real total cost for Romania, which would be calculated in the next step.) The cost per learner per year in Romania was obtained by cross multiplication in relation with the working total cost for

Romania for 1 year, the total annualized cost for Estonia for the year 2009 and the cost per learner per year in Estonia.

Third, the Total Sexuality Education Program Cost for Romania for one Year was calculated. As previously touched upon, Estonia introduced a school-based, compulsory and intracurricular program called Human Studies which also includes sexuality education. The subject spreads across grades 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup>, so each pupil cohort receives sexuality education during three school years. Focusing on costs per year, the number of pupils enrolled in grades 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> in Romania in the year 2015 was obtained (Romanian National Institute of Statistics, 2017).

To obtain the Total Sexuality Education Program Cost for Romania for One Year, the total of learners in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade was multiplied with the cost per learner per year which was previously obtained for Romania.

### **3.8. Step 6: Cost in Status Quo vs Cost in Intervention**

In this last step, the Cost in Status Quo, meaning no country-wide, school-based, compulsory and intracurricular sexuality education program in Romania, was compared with the cost resulted by introducing a compulsory and intracurricular sexuality education intervention in Romania in all Romanian schools, called here Cost in Intervention. These costs are calculated per year.

First, the Cost in Status Quo is the National Total Cost for incidences of unintended birth, abortion, syphilis, HIV/AIDS obtained in Step 3.

Second, the Cost in Intervention was calculated as follows. To begin with, the Total Averted Costs calculated in Step 4 were deducted from the National Total Cost (the Cost in Status Quo) to obtain the National Total Cost in Case of Intervention. Then, this National Total Cost in Case of Intervention was added to the Total Sexuality education Program Cost for Romania for One Year, calculated in step 5. Thus, the Cost in Intervention was obtained.

Finally, the Cost in Status Quo was deducted from the Cost in Intervention. Thus, the cost of introducing a compulsory sexuality education program in Romanian schools was obtained.

These cost calculations were done both in the best case as well as in the worst case scenario. For each scenario, the total number of averted cases of unwanted incidences was additionally presented.

## **4. Results**

#### 4.1. Step 1: Epidemiological Status Quo for unintended birth, abortion, syphilis and HIV/AIDS

The incidences listed in Table 5 were obtained for the year 2015 for each of the four sexual health indicators, for the age groups 15-19 and 20-24 year olds. Additionally, the total incidence for each sexual indicator is presented in order to provide a context for the frequency of births, abortions and new cases of syphilis and HIV/AIDS in young people. The number of birth cases for 20-24 was also included.

Sexual health indicator	Number of New Cases per Age Group in 2015		
	total	15-19 olds	20-24 olds
Unintended Birth	197,491	18,633	37,760
Abortion	70,885	6,431	13,216
Syphilis	949	87	118
HIV/AIDS	698	31	94

Table 5: Romania sexual health indicators incidences 2015

Values marked in grey were not included in further calculations.

#### 4.2. Step 2: Average cost per case for unwanted incidences

In the second step, following each distinct outlined methodology, an average cost per case per age group for each sexual health indicator was calculated. They are listed in Table 6. The average birth case for 20-24 year olds, not included in the calculation, costs 429.0 €. The total costs were included in order to have a basis of comparison.

Sexual health indicator	Average Cost per Case per Age Group		
	total	15-19 year olds	20-24 year olds
Unintended Birth average cost per case	458.5 €	415.6 €	429.0 €
Abortion average cost per case	85.4 €	83.8 €	84.5 €
Syphilis average cost per case	503.8 €	281.2 €	438.6 €
HIV/AIDS* average lifetime cost per case (32 years)	188,177.4 €	188,177.4 €	188,177.4 €

Table 6: Average cost per case for unwanted incidences

Values marked in grey were not included in further calculations.

For each sexual health indicators, the cost differences between age groups have different reasons. The average price per birth case was built as an average from the eight types of birth DRG codes, each with its own degree of medical gravity, implying more or less complications. Therefore, a birth in a young person will be cheaper because it involves fewer complications. The difference between the prices for abortion cases are minimal because the majority of cases took place outside the hospital system and were assigned the price of an abortion DRG that did not imply complications, thus flattening the prices for all categories. The big difference between syphilis cases is due to the big difference in the DRG average for each age category. Since data was obtained on all DRG cases that had ICD codes related to syphilis as a primary or secondary diagnosis, one can assume that, compared young people between 15 and 19, patients who are 20 to 24 year old and live with more serious forms of syphilis. Another possibility is that they might be afflicted with a more serious diagnosis which has syphilis as a secondary diagnosis. Respecting the established methodology, the average lifetime cost per new case of HIV is the average lifetime cost of the “total” age category.

#### **4.3. Step 3: National Total Cost per year for incidences of unintended birth, abortion, syphilis, HIV/AIDS**

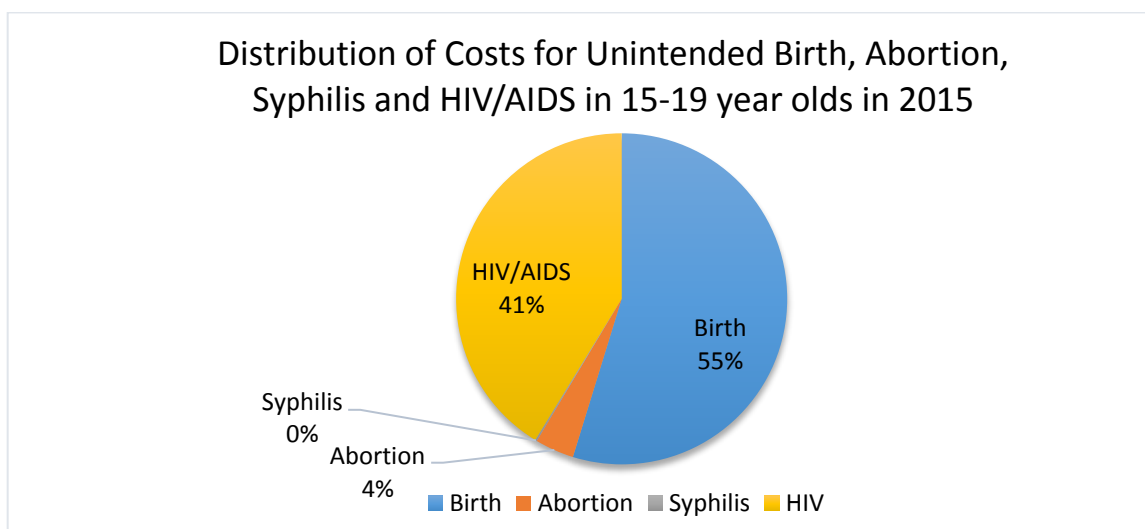
In the third step, as seen in Table 7, the National Total Cost per year for all incidences of unintended birth, abortion, syphilis and HIV/AIDS was obtained: 32,997,647 €.

Respecting the methodology, the amount of 16,199,817 €, representing the total cost for birth in 20-24 year olds, was not included in the calculation and was not listed in Table 7. The “total” age group was also not listed in the table, in order to avoid misunderstandings. It is however an interesting basis of comparison, therefore the costs shall be listed here. In 2015, the total birth costs in Romania were 90,540,070 €, the total abortion costs, 6,055,865 €, total costs related to new cases of syphilis, 478,104 €, and the total costs related to new cases of HIV/AIDS, 131,347,816 €. Together they amount to 228,421,855 €.

Sexual health indicator	Total Cost per Sexual Health Indicator per Age Group in 2015	
	15-19 year olds	20-24 year olds
Unintended Birth	7,743,945 €	-
Abortion	538,851 €	1,116,383 €
Syphilis	24,331 €	51,964 €
HIV/AIDS	5,833,499 €	17,688,674 €
Total per age group	14,140,625 €	18,857,022 €
Total for 15-24	32,997,647 €	

**Table 7: National Total Cost linked to incidences of unintended birth, abortion, syphilis, HIV/AIDS that o HIV/AIDS in 2015. Per year perspective for unintended birth, abortion and syphilis. 32 year lifetime costs perspective for HIV/AIDS**

These results show that lower costs are tied to the age group 15-19 even though in the age group 20-24, the costs related for birth, which amount to 16,199,817 €, were not included. As can be seen from the distribution of costs in Figure 2, in the 15-19 years old age group, costs related to birth represent 55% of the total cost for this age group, surpassing the cost related to HIV/AIDS, which represents 41%. The distribution of costs in Figure 3 shows that for 20-24 year olds, the HIV/AIDS cost, which, as shown in Table 7, is 17,688,674 €, weights the most. HIV/AIDS would have been the biggest cost source for 20-24 year olds even if the 16,199,817 € related to birth would have been included. For both age groups, abortions are not a big source of cost. The cost related to syphilis represent below 0% of the total cost for both age groups.



**Figure 2: Distribution of Costs for Unintended Birth, Abortion, Syphilis and HIV/AIDS in 15-19 year olds in 2015**

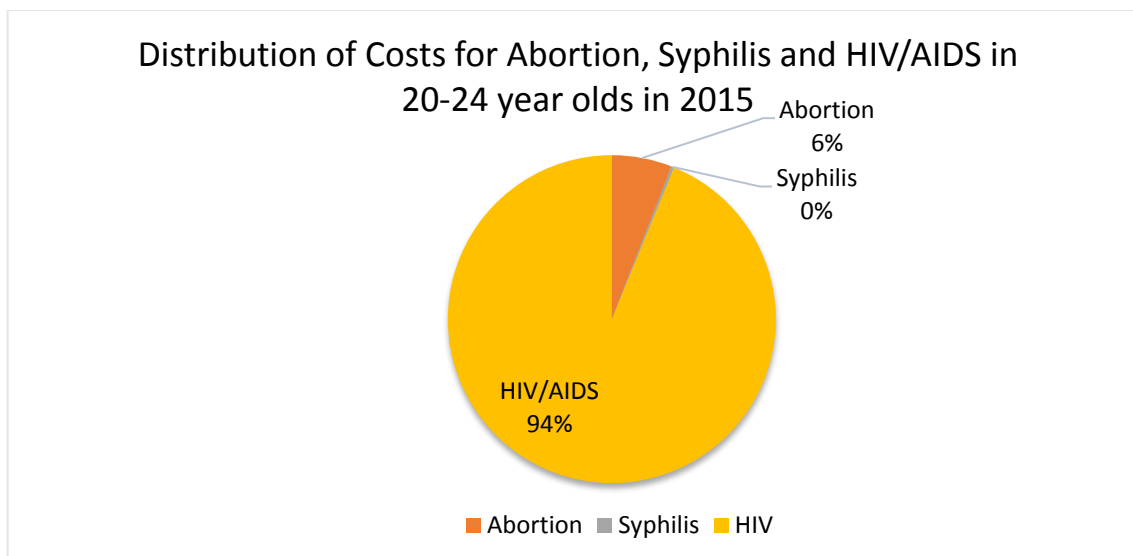


Figure 3: Distribution of Costs for Abortion, Syphilis and HIV/AIDS in 20-24 year olds in 2015

#### 4.4. Step 4: Case and cost reductions in case of a sexuality education intervention in Romania

##### 4.4.1. Reduction rates

In this fourth step, as listed on Table 8, the reduction rates observed in Estonia in 2001-2009 were divided by nine to obtain the reductions per year for our best case scenario. In the worst case scenario the reductions represent 50% of the Estonian per year reductions.

Sexual health indicator	Reduction 100% Estonia Model per year BEST CASE SCENARIO		Reduction 50% Estonia Model per year WORST CASE SCENARIO	
	15 - 19 year olds	20 - 24 year olds	15 - 19 year olds	20 - 24 year olds
Unintended Birth	1.0%	-	0.5%	-
Abortion	3.3%	4.7%	1.7%	2.3%
Syphilis	10.5%	10.7%	5.3%	5.3%
HIV/AIDS	8.0%	10.6%	4.0%	5.3%

Table 8: Incidences Reduction rates per year. Best and worst case scenario

##### 4.4.2. Averted cases

Next, as listed in Table 9, by applying the per year reductions listed above - 100% of the Estonia reductions for the Best case scenario and 50% of the Estonia reductions for the worst case scenario - the number of averted cases was calculated in both scenarios.

Sexual health indicator	Reduction 100% Estonia Model per year BEST CASE SCENARIO		Reduction 50% Estonia Model per year WORST CASE SCENARIO	
	15 -19 year olds	20 - 24 year olds	15 - 19 year olds	20 - 24 year olds
Unintended Birth	180.0	-	90.0	-
Abortion	214.4	615.8	107.2	307.9
Syphilis	9.1	12.6	4.6	6.3
HIV/AIDS	2.5	10.0	1.2	5.0

Table 9: Averted cases in Romania per year. Best and worst case scenario

#### 4.4.3. Averted costs

By multiplying the number of averted cases with the average costs per case in the best case scenario, a total 2,498,004 € averted costs were obtained. Half of that sum, namely, 1,249,002 €, would be averted in the worst case scenario. Table 10 lists all costs that make up these sums.

Sexual health indicator	Averted costs per year 100% Estonia BEST CASE SCENARIO		Averted cost per year 50% Estonia WORST CASE SCENARIO	
	15 -19 year olds	20 - 24 year olds	15 - 19 year olds	20 - 24 year olds
Unintended Birth	74,821 €	-	37,410 €	-
Abortion	17,962 €	52,018 €	8,981 €	26,009 €
Syphilis	2,565 €	5,536 €	1,282 €	2,768 €
HIV/AIDS	467,436 €	1,877,667 €	233,718 €	938,833 €
Total per age group	562,783 €	1,935,220 €	281,392 €	967,610 €
Total	2,498,004 €		1,249,002 €	

Table 10: Averted costs in Romania. Per year perspective for Unintended Birth, Abortion and Syphilis. Lifetime perspective for HIV/AIDS. Best and worst case scenario

#### 4.5. Step 5: Cost of a sexuality education intervention in Romania

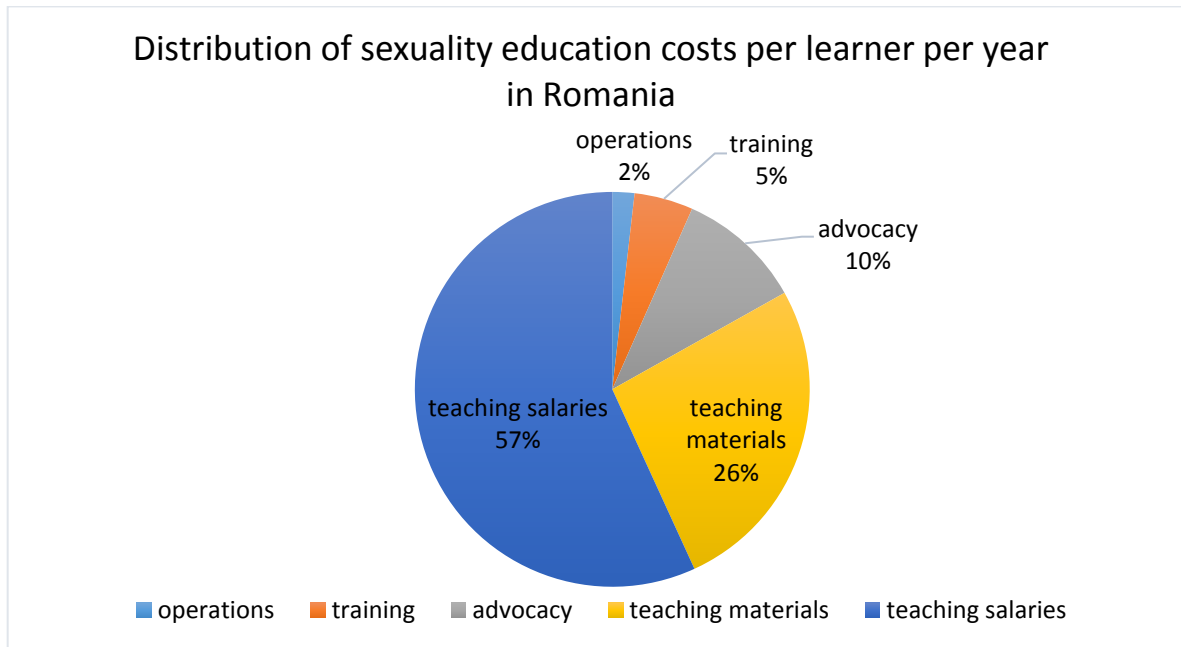
Table 11 shows the costs that went into calculating the cost per learner per year in Romania. The cost per learner per year in Estonia was 10.5 €. The total annualized cost for the program in 2009 was 296,190 € (UNESCO, 2011).. After applying the cost reductions for each cost category, the working total cost for Romania for 1 year of 90,117 € was obtained. Cross multiplying these three categories, a cost per learner per year of 3.19 € was obtained for Romania.



Calculation of Sexuality education Costs per learner per year in Romania							
	operations	training	advocacy	teaching materials	teaching salaries	total	cost per learner per year
Estonia (2009)	5,078 €	13,540 €	28,773 €	23,695 €	221,720 €	296,190 €	10.5 €
Romania (Estonia cost x reduction)	1,629 €	4,344 €	9,231 €	23,695 €	51,217 €	90,117 €	<b>3.19 €</b>

**Table 11: Calculation of sexuality education cost per learner per year in Romania**

Figure 4 shows how, through the reductions applied to the different cost categories, a slightly different distribution of costs was obtained for a sexuality education intervention in Romania.



**Figure 4: Distribution of sexuality education costs per learner per year in Romania**

Table 12 shows the costs that went into calculating the total costs per year for a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania. There were 574,003 enrolled pupils (learners) in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade in Romania in the year 2015 (Romanian National Institute of Statistics, 2017). The total pupil (learner) number was multiplied with the 3.19 € cost per learner per year, resulting in 1,829,586 € total cost per year for a sexuality education intervention in Romania.

Calculation Total cost per year for a sexuality education program in Romania (grades 5 <sup>th</sup> , 6 <sup>th</sup> and 7 <sup>th</sup> )	
Number of Pupils in Romania 11 year olds	193,108
Number of Pupils in Romania 12 year olds	189,834
Number of Pupils in Romania 13 year olds	191,061
Total Number of Pupils in Romania 5 <sup>th</sup> , 6 <sup>th</sup> and 7 <sup>th</sup> grade in one calendar year	574,003
Cost per learner per year	3.19 €
<b>Total cost per year for a sexuality education program in Romania</b>	<b>1,829,586 €</b>

**Table 12: Calculation total cost per year for a sexuality education program in Romania (grades 5th, 6th and 7th)**

#### 4.6. Step 6: Costs in Status Quo vs Costs in Intervention

In this final step, the cost per year in both best and worst case scenario were compared. The previously obtained Cost in Status Quo, that is, in the absence of a sexuality education intervention, amounts to 32,997,647 €

For the **Best Case Scenario**, outlined in Table 13, the Total Averted Costs, obtained by apply the reductions in Estonia to 100% percent, amounted to 2,498,004 €. Deducted from the National Total Cost (the Cost in Status Quo) of 32,997,647 €, a National Total Cost in Case of Intervention of 30,499,643 € was obtained. This amount was added to the 1,829,586 € Total Sexuality education Program Cost for Romania and a 32,329,230 € Cost in Intervention was obtained.

By deducting the Cost in Status Quo from the Cost in Intervention, the final result shows that, in the best case scenario, introducing a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania means **gaining 668,418 in savings**. Additionally, it means averting **180 unintended births, 830 abortions, 22 new syphilis cases and twelve new HIV/AIDS cases**.

Best case scenario: Cost per year				
		15-19 olds	20-24 olds	total
	Total averted costs through 100% Estonia reduction	562,783 €	1,935,220 €	2,498,004 €
	National Total Cost in Case of Intervention	13,577,842 €	16,921,801 €	30,499,643 €
	Total Sexuality Education Program Cost for Romania			1,829,586 €
<b>Cost in Intervention</b>				<b>32,329,230 €</b>
<b>Cost in Status Quo</b>	National Total Cost	14,140,625 €	18,857,022 €	<b>32,997,647 €</b>
<b>Cost Per Year</b>				<b>-668,418 €</b>

**Table 13: Best case scenario: Cost per year**

For the **Worst Case Scenario**, outlined in Table 14, the same methodology was used. The final result shows that, in the worst case scenario, introducing introducing a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania means **spending an extra 580,584 €**. However, it additionally means **averting 90 unintended births, 415 abortions, eleven new syphilis cases and six new HIV/AIDS cases**.

Worst case scenario: Cost per year				
		15-19 olds	20-24 olds	total
	Total averted costs through 50% Estonia reduction	281,392 €	967,610 €	1,249,002 €
	National Total Cost in Case of Intervention	13,859,234 €	17,889,412 €	31,748,645 €
	Total Sexuality Education Program Cost for Romania			1,829,586 €
<b>Cost in Intervention</b>				33,578,232 €
<b>Cost in Status Quo</b>	National Total Cost	14,140,625 €	18,857,022 €	32,997,647 €
<b>Cost Per Year</b>				+580,584 €

**Table 14: Worst case scenario: Cost per year**

## 5. Discussion

The purpose of the paper is to measure the economic consequences of introducing country-wide, school-based, compulsory and intracurricular sexuality education program in Romania. By looking at the 2015 incidences for unintended birth, abortion, syphilis and HIV/AIDS in 15-19 year olds and 20-24 year olds and by calculating an average cost per case for each of these sexual health indicators, the cost in status quo could be obtained. In the status quo, in the absence of a sexuality education intervention in Romanian schools, medical costs at national level related to the unwanted incidences amounted in the year 2015 to 32,997,647 €. By using the reduction rates documented in Estonia on the Romanian costs, the number of averted cases and the averted costs in case of a sexuality education intervention were calculated. Moreover, by using the program cost structure in Estonia, a total cost per year of 1,829,586 € for a national compulsory sexuality education intervention in Romanian schools was calculated.

Finally, by comparing the cost in status quo with the cost in intervention, it was calculated that in the best case scenario, if the reduction rates in Estonia were to be applied to 100%, 668,418 € in medical costs would be saved. On top of that, it would mean averting 180 unwanted births, 180 unintended births, 830 abortions, 22 new syphilis cases and twelve new HIV/AIDS cases in young people between 15 and 24. In the worst case scenario, if the reduction rates in Estonia were to be applied to only 50%, an investment of 580,584 € would

be required. It would additionally mean averting 90 unintended births, 415 abortions, eleven new syphilis cases and six new HIV/AIDS cases in young people between 15 and 24.

It is a strength of this paper that the cost analysis is based on a large data set. Data from the Romanian DRG system (RODRGv1) were cross referenced with data from European and national databanks. An important emphasis was made on HIV/AIDS related costs, which were obtained by combining hospital data with data regarding HIV/AIDS treatment from the Romanian National Program for Prevention, Monitoring and Control of HIV/AIDS Infection. Data was also obtained by consulting current Romanian health legislation which outlines costs related to the Romanian hospital system and costs related to the National HIV/AIDS program.

Two notable secondary findings were made while analyzing.

On birth. The number of total DRG birth cases was 165,037 in 2015 in the Romanian hospital system, while the number of live births in 2015 in Romania according to Eurostat was 197,491. There is a staggering difference of about 32,000 births. They could be explained through births taking place in hospitals that are not in the DRG system. Exact data on the number of hospitals outside the DRG system could not be obtained. According to the information provided by the NSPH-MPD staff during the meeting to discuss the hospital data request, the number of hospitals that are not in the DRG system is fairly small. These are usually hospitals in the premise of state prisons. On top of that, in the Romanian legislation, the work of midwives is regulated, but it is not yet fully legal for them to assist births at home and midwife-assisted home births are not a common practice in Romania (Mame pentru Mame, 2017). So it is possible that an important part of these 32,000 births took place without medical assistance in Romania in 2015. This situation would be very worrisome and needs further looking into.

On HIV/AIDS. Cost data provided by the Matei Balș Institute for this paper show that 10,551 patients were receiving ART treatment in 2015. At the same time, the Matei Balș Institute Report on the year 2015 show that there were 13,766 people living with HIV/AIDS in Romania in that same year (National Institute for Infectious Diseases Prof. Dr. Matei Bals, 2015). Based on this comparison, it would seem that 3,215 people did not receive their ART treatment in 2015. This situation would also be very worrisome and needs further investigation.

At the same time, these important secondary findings once again show the role of data driven health research, which is currently not yet so well developed in Romania.

## **5.1. Current state of research**

### **5.1.1. National**

First, it has to be stressed that this paper is certainly the first analysis on the economic consequences of sexuality education *in* and focusing *on* Romania.

Second, in 2014, Romania was the country to spend the lowest share of its GDP among all EU Member states. Romania's total health expenditure per capita in 2013 was US\$ 988, compared to the European Union average of US\$ 3379 (Vlădescu et al., 2016).

Therefore, in the face of the low resources Romania puts into its health system, it would be advantageous to maximize the efficiency with which these resources are used. This is indeed part the national objective set for 2013 in the National Sustainable Development Strategy for Romania 2013-2020-2030 (Romanian Government and United Nation's Development Program, 2008).

A way to increase efficiency would be to make use of available health system data, in order to make informed decisions in the field of public health. In spite of a big amount of data on the health system and on population health being collected, the current data collecting system faces both the problem of fragmentation and that of duplication, which was also a challenge for the process of writing this paper. Moreover, there is not much use being made of this information that is being gathered and there is not much data driven analysis for the purpose of planning and decision-making (Vlădescu et al., 2016).

In this context, a data-driven cost analysis like the one this paper delivers has fair reasons to stand out in Romania.

#### **5.1.2. International**

A systematic review looking at economic evaluations of sexual and reproductive health programs for young people shows that such studies are fairly rare. Thus, only 24 papers were identified. Alongside ten evaluations of youth friendly sexual and reproductive health programs, 16 evaluations of school based sexuality education programs were found. The literature review identified 20 cost analyses, four cost-effectiveness analyses, four cost-utility analyses and three cost-benefit analyses. A mere two cost effectiveness studies are based in empirical data, the others analyzed effectiveness are based on existing literature, expert opinions and assumptions. The majority were cost analyses, which means that data on programs' costs are more easy to obtain than it is to analyze their effectiveness. Furthermore, while there are many a study looking at the impact and effectiveness of sexual and reproductive health programs for young people, the systematic reviews shows that a very small number of them have a cost or cost-effectiveness component. (Kivela-Kempers, 2015)

The same author of this systematic review co-authored the UNESCO study called "School-Based Sexuality Education Programmes, A Cost and Cost-Effectiveness Analysis in six countries" (UNESCO, 2011). This study includes cost analyses of big-scale sexuality education programs in all six countries it included (Nigeria, Kenya, India, Indonesia, Estonia and the Netherlands) and looks at health effects related impact in Kenya and Estonia. Moreover, this study, which is viewed by the UNESCO as "seminal", put forth one cost-effectiveness analysis, namely of the country-wide sexuality education program in Estonia,

which was indeed in part the basis of this present paper focusing on the country-wide economic impact of sexuality education in Romania.

The scarcity of identified studies looking at the economic impact of school based sexuality education programs could be explained in several ways.

First, as outlined in the *Standards for Sexuality education in Europe*, Europe is the space where sexuality education was first developed. The country where it first became mandatory was Sweden, in 1955. Other Scandinavian countries, Germany, Austria, the Netherlands and Switzerland joined to make sexuality education mandatory in schools in the 1970s and 1980s. France, the United Kingdom, Ireland, and in the South West, Portugal and Spain followed them in the 1990s and 2000s. Countries in Central and Eastern Europe began the development of sexuality education after the fall of communism. Despite the discrepancies between countries, a lot of experience lies in Europe in the field of sexuality education. However, there has been very little exchange between European countries with regard to their standards, policies and research pertaining to the quality and the effectiveness of sexuality education program. This was in part due to language barriers, but also to a lack of initiative to translate and publish local documents in international journals (WHO Europe and German Federal Centre for Health Education, 2011).

This situation has triggered several attempts to bridge this communication gap and unify research by the development of documents of regional or global impact. One such attempt are the aforementioned *Standards for Sexuality education in Europe*.

Another such attempt is the UNESCO International Technical Guidance on Sexuality Education, which includes a systematic review that looked at 87 studies that analyze the impact of sexuality education programs on sexual behaviors, such as initiation of sex, frequency of sex, number of sexual partners, use of condoms, use of contraception, sexual risk-taking (UNESCO, 2009). As observed in the *Standards for Sexuality education in Europe*, even in this UNESCO systematic review, 47 of the included studies were from the United States of America, versus eleven studies from "other developed countries", the majority of which were from the UK, therefore in the English language.

Finally, the language barrier is also a limitation of the systematic review looking at economic evaluations of sexual and reproductive health programs for young people, as only literature in English was reviewed (Kivela-Kempers, 2015).

All this points to the fact that, because of the nature of the separate development of sexuality education in different European countries and their language barriers, it is difficult to explore all the potentially existing literature on the economic impact of sexuality education.

The second reason why literature on the economic impact of sexuality education is scarce lies in the nature of sexuality education itself.

There are several challenges in assessing the economic impact of school based school sexuality education programs: their long duration, which makes pre- and post-measurement difficult, the lack of comparable groups especially when implementing a program at national or regional level, the lack of data on outcomes, the difficulties in attributing outcomes to the intervention correctly, the delay between the moment of the sexuality education intervention and the time of first sexual intercourse.(Kivela-Kempers, 2015).

The effectiveness of a sexuality education intervention is also challenging to measure because it is linked to different outcome types that, in turn, have a relation to time. Immediate outcomes are tied to behavior intentions, meaning improvement of one's knowledge, skills and attitudes, which can then influence one's sexual behavior. Intermediate outcomes are tied to behavior changes, for example delayed first sexual contact, increased condom use, fewer sex partners. Final outcomes are sexual health indicators, such as changes in the incidences of birth, abortion, STI and HIV/AIDS or changes in mortality, morbidity and health related quality of life (QALYs, DALYs) (Kivela-Kempers, 2015).

The third reason why literature on the economic impact of sexuality education is fairly scarce could be the dominant context of internationally coordinated rights-based advocacy. In the field of comprehensive sexuality education (CSE), as well as in the broader sexual and reproductive health and rights (SRHR) field, the current and most important advocacy paradigm is the “rights-based” approach. The rights-based approach to sexuality education draws from international legal human rights commitments. It has also been shaped by documents settled upon major United Nations human rights conferences in the nineties, such as the 1994 Cairo International Conference on Population and Development and other more recent documents and meetings, such as the 2006 Yogyakarta Principles on The Application of International Human Rights Law in relation to Sexual Orientation and Gender Identity and the 2014 Bali Youth Forum. The rights-based approach incorporates the core belief that young people have inalienable rights, in line with international human rights law. In fulfilling the obligation to respect these rights, the access of young people to sexuality education as well as the content of sexuality education must respect certain standards that were briefly touched upon in this paper’s introduction (Berglas et al., 2014). For example, the right to be treated equally and not be discriminated against translated in sexuality education that also includes LGBT (lesbian, gay, bisexual, transgender) youth.

While the more utilitarian view of an economic evaluation is not inherently opposed to this rights based approach, it does to some extent move away from it. However, if this opposition ever really existed, this seems to be changing. For example, from the 16 economic evaluations of school based sexuality education programs, only two were from the 1990, the other 14 were published starting with the year 2000 (Kivela-Kempers, 2015), which means that researching the economical impact of sexual education has only mostly

been done in the last 17 years. Another good example is the direction of researching the economic impact of gender equality. A fact and figures sheet put together by the UN WOMEN on the benefits of economic empowerment of women lists sources which go back no further than 2007 (UN WOMEN, 2015). Moreover, it was just early 2017 that the European Institute for Gender Equality published a study called "Economic Benefits of Gender Equality in the European Union" (European Institute for Gender Equality, 2017).

Hence, internationally, the analysis on the economic consequences of a compulsory sexuality education intervention on the country level that this paper delivers is part of a fairly new research direction.

## **5.2. Limitations**

### **5.2.1. Over time view**

The calculations in this paper represent a per year snapshot of how cost effective introducing a country-wide, school-based, compulsory and intracurricular sexuality education program could be if the reductions could be fully applied.

However, were such a sexuality education intervention to be introduced in Romania starting with the school year 2017/2018 in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade, meaning for 11, 12 and 13 year olds, it would take until 2030 for the youngest of this first cohort to reach the age of 24, completing the intervention-outcome cycle. It is therefore important to note that potential reductions in unwanted incidences will occur in time. Consequently, one may also assume that it takes time for the cumulated per year total costs of a sexuality education intervention to be compensated with the cumulated averted medical costs that the intervention made possible.

In an over-time view of how cost effective a sexuality education might be, another over time evolution that must be taken in account are natural epidemiological trends. In order to correctly calculate the potential averted costs when introducing a sexuality education program, it is advisable that the natural trends for birth, abortion, syphilis and HIV/AIDS in Romania be considered.

Finally, as previously explained, looking at changes in incidences of birth, abortion, STI and HIV means only looking at final outcomes of sexuality education, which would be reductive. Immediate outcomes tied to behavior intentions and intermediate outcomes tied to behavior changes are also to be taken in consideration (Kivela-Kempers, 2015).

### **5.2.2. Budgetary outlays perspective**

Several cost categories are tied to the implementation of a sexuality education intervention. These are: operations, training, and advocacy, teaching materials and teaching salaries. One idea formulated in the UNESCO 2011 Estonia Study is that looking at all these cost categories, one could argue that the most important one, namely teaching salaries, is already covered, because teachers are already in schools being paid for teaching. So from



the distribution of costs among the costs categories, the percentage of costs tied to teaching salaries could be deducted from the projected cost of the intervention. This way, the costs for a sexuality education intervention are considered to be only the budgetary outlays, meaning the costs that come in addition to the regular expenses tied to teachers' salaries (UNESCO, 2011). In case of this paper's model for Romania, the budgetary outlays, made out of costs tied to operations, training, advocacy and teaching materials, represent 43% of the total cost per year for a sexuality education program in Romania. The rest of 57% of costs, representing teaching salaries, would then have to be deducted from the model.

### **5.2.3. Medical costs**

There were several types of medical costs that were omitted from this paper.

First, limitations regarding syphilis and DRG and FFS for HIV/AIDS. Missing data and assumptions made have been already touched upon. Again, some of the assumptions that were made regarding data are, in part, only assumptions (for example, the distribution of the medical costs elements included in the 32 years lifetime expectancy model). They were made for lack of better data. Therefore, the measure in which they might convey inaccurate real costs is the measure the calculation results would vary.

Second, the epidemiological numbers for young people below 15 show that they too could be an age group of interest. In Romania, in 2015, there were 676 births in 10 to 14 year olds (Eurostat [demo\_fordagec]) and 422 abortions in women younger than 15 (Eurostat [demo\_fabort]). There was a negligible number of new syphilis cases in people younger than 15 (Data provided Romanian National Institute of Public Health on 2016.09.2016) and 6 new cases of HIV in children between 5 and 15 (National Institute for Infectious Diseases Prof. Dr. Matei Bals, 2015).

Third, the difference between HIV and AIDS cases. Out of the 698 new HIV/AIDS cases diagnosed in 2015, 370 were new HIV cases, 328 were new AIDS cases (National Institute for Infectious Diseases Prof. Dr. Matei Bals, 2015). The 32 years lifetime expectancy model is based on new HIV cases, not new AIDS cases. They might be a discrepancy between the lifetime expectancy of a new HIV case and a new AIDS case. Also an important note is that no discounting of HIV/AIDS lifetime costs was made.

Fourth, only the medical costs related to births have been taken in account. Yet each birth implies medical costs related to the pregnancy. Pregnancy related costs have been completely expelled from this calculation and could weight in an important way on the results.

Fifth, other medical costs could have been included, for example, for other sexually transmitted infections. An example might be HPV, since Romania reports an incidence of cervical cancer at least double than the one in Finland, Luxembourg and France, countries that have programs for education and prevention on sexual and reproductive health (Rada,

2014). Other examples might be gonorrhea, although Romania seems to have one of the lowest rates in Europe, and chlamydia, which is, however, officially known to be very poorly diagnosed and reported in Romania. STI underreporting is indeed an issue in Romania (European Center for Disease Prevention and Control, 2012).

Sixth, only hospitals in the DRG system were included, but, as previously explained, there are some hospitals in Romania not included in this system. Moreover, the entire primary care system comprising services offered by family doctors were not included in analysis. Family doctors are paid per capita through a tariff per each insured person who is enrolled at their practice, or through a tariff per service, following an established medical service points system. Family doctors are, for example, involved in tracing infections such as syphilis and HIV, as well as giving care for chronic diseases such as AIDS. They are also involved in pregnancy monitoring. Family doctors can also send patients to doctors in the specialized ambulatory care, meaning for example to the gynecologist. Specialized doctors who own their own practice are also paid through fee for service through the established medical service points system. An insured patient also has access to paraclinical services, which could also be included in a cost analysis (National Health Insurance Fund, 2016).

Seventh, medical costs related to soft outcomes were not included. For example, a 2016 study shows that 7 out of 10 of LGBT students in Romania think that young people from the LGBT community are not safe at school, especially from the emotional point of view. 6 out of 10 LGBT students say they have been the victim of the witness of a verbal or physical aggression on the base of sexual orientation or gender identity (ACCEPT Romania, 2016). It would be interesting to find a way to look at medical costs related to the bullying and discrimination that young LGBT people in Romania experience, such as medical cost for psychological and psychiatric care.

These elements give an overview on a cost analysis that was not only conservative in dealing with its data, but which could also include numerous other medical costs elements in a future extended version.

#### **5.2.4. Indirect costs and intangible costs**

There are many potential indirect costs and intangible costs related to unintended birth, abortion, syphilis and HIV/AIDS that have not been included in this paper. Only a few examples have been gathered here below.

First and most important, on top of the medical costs tied to the medical care provided to HIV/AIDS patients, some indirect costs are also supported by the Romanian state.

Each person living with HIV/AIDS is entitled with monthly food aid. Currently, a person living with HIV/AIDS receives an average of €3.4 per day.(Romanian Government Decision No. 665/2016 to amend the Annex to Government Decision No. 429/2008). Between January 1<sup>st</sup> and September 30<sup>th</sup> 2015 9,292 people – 9,046 adults and 264 children – received the monthly food aid, resulting in €7.3 million costs (Agerpres, 2016). In this papers's best case

scenario, monthly food aids averted costs calculated for a lifetime expectancy of 32 years for 12 cases averted in a year would amount to approx. 478,500€. In the worst case scenario, the averted costs for a lifetime expectancy of 32 years for 6 cases averted in a year would be of about 239,300€.

Additionally to the monthly food aid, depending on their health situation people living with HIV/AIDS may receive disability aid. They also have the right to early retirement due to illness and thus to a disability pension (Law 584/2002); (Eu sunt! Tu?, 2017).

Another example is maternal mortality. Romania has the highest maternal mortality rate in the EU. Maternal death is defined as: “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes” (WHO, 2017). Thus, by definition, maternal death is tied to pregnancy and can be linked to either birth or abortion. The lack of sexuality education leads to more births and abortions in young people. Therefore, young people who go through a pregnancy are also exposed to the risks related to maternal mortality that being pregnant in Romania entails. These intangible costs of this fatal suffering should also be considered.

Finally, unwanted pregnancies which are carried to term sometimes result in newborns being abandoned in state facilities. In Romania, the number of newborns abandoned in hospitals has been on the rise since 2010: 762 cases in 2010, 942 cases in 2011 and 918 cases in 2012 (Romanian Ministry of Health, 2014). The indirect costs of providing for the new wardens of the state which are born each year to young people between 15 and 19 and younger than 15 should also be taken in account. Moreover, the intangible costs related to the suffering of having to abandon a child should be considered, as the suffering that come with being placed into state care. The adoption system in Romania has been strongly criticized for its bureaucracy, which often makes adoption impossible. For example, in 2012, out of 60,000 children in state care, only 1,602 were declared able to be adopted, thus opening the possibility for them to start the adoption process (Mediafax, 2012).

#### **5.2.5. Difficulties in obtaining data**

Health data management is not unified in Romania, data being separated in smaller data banks (Vlădescu et al., 2016). Apart from the process of identifying the type of data needed for this paper, an important challenge was thus identifying the correct data bank that would provide the necessary data.

On top of that, financial and bureaucratic issues arose. For the purpose of obtaining data for this paper, data requests were sent to public institutions. Current legal bindings make access to public institutions data open and free of charge (Law 544/2001 updated 2016). However, for some institutions, data processing fees may be charged. For some institutions, the right to charge data processing fees is regulated by Ministry Order, as it is for example

the case for the National Institute for Public Health (Romanian Ministry of Health Order No. 1022/2002). There is however no unified data processing fee system. On top of the financial burden, there is also a bureaucratic burden that comes with the numerous steps involved in signing a data provision contract.

Moreover, in order to be able to discuss the research project and receive the proper consultancy for the data request, travelling to Romania for in person meetings was necessary, which also increased the efforts made to make this paper possible.

These increased burdens were the reason why further data requests for other types of direct medical and non-medical costs and indirect costs were not made, which might be viewed as a limitation of this paper.

### **5.3. Recommendations**

European and international guidelines for developing a sexuality education intervention exist. There are three main published documents that give guidelines regarding sexuality education. First, the already mentioned *Standards for Sexuality education in Europe* (WHO Europe and German Federal Centre for Health Education, 2011), followed by a *Guidance for Implementation for the Standards for Sexuality Education* (WHO Europe and German Federal Centre for Health Education, 2013), developed by the WHO Europe, together with the German Federal Center for Health Education in 2011 and 2013, respectively. Second, the also previously mentioned *International technical guidance on sexuality education*, volume I (UNESCO, 2009) and volume II (UNESCO, 2009 ), produced by UNESCO and others in 2009. Third, the *It's all one curriculum* (Population Council, 2011), developed by the International Sexuality and HIV Curriculum Working Group in 2009, with support from the Population Council in 2011.

A fourth important international study is the UNESCO 2011 Estonia Study, *School-Based Sexuality Education Programmes, A Cost and Cost-Effectiveness Analysis in six countries* (UNESCO, 2011).

There are some main differences and similarities between these three central documents, as summarized in the *Guidance for Implementation for the Standards for Sexuality Education* (WHO Europe and German Federal Centre for Health Education, 2013). The WHO Europe and the German Federal Center for Health Education document promote holistic sexuality education. In this approach, the focus is not only on contraception and safer sex, but on sexuality as an important part of what it means to be human. This is why, according to the Standards, sexuality education should start from birth and end at age 18 or older, offering age appropriate sexuality education through a very detailed matrix. The UNESCO *International technical guidance on sexuality education* has a more international audience, therefore focusing on the HIV/AIDS epidemic, avoiding risky sexual contacts and safer sex. Age appropriate sexuality education is described starting with age 5. The Population Council document is also international, but manages to integrate HIV/AIDS with broader issues

regarding sexuality, gender and sexual and reproductive rights, focusing on a primarily adolescent target group. It is a very valuable resource in terms of the content of sexuality education lessons.

Each document is rich in its content involving the practice, the policy and the programming of sexuality education and stands as an invaluable resource (WHO Europe and German Federal Centre for Health Education, 2013). Since Romania is part of the European Union, the blueprint for implementing a sexuality education program in Romania should be the *Standards for Sexuality education in Europe* and the *Guidance for Implementation for the Standards for Sexuality Education*. This is why, in chapter 1 of this paper, the definitions for sexuality and sexuality education that are used in the *Standards* has been adopted.

Taking this framework and the results of this paper in account, some recommendations can be made regarding the introducing of a compulsory sexuality education program in Romanian schools.

**1<sup>st</sup> Recommendation. On introducing a compulsory sexuality education program in Romanian schools**

The results of the present paper indicate that the cost of introducing a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania would be compensated through the reductions in medical costs attainable through this intervention. These reductions are tied to the averted cases of unintended births, abortions, syphilis and HIV/AIDS in young people between 15-19 and 20-24 in Romania. The Romanian Government should thus consider investing in such sexuality education program in schools.

**2<sup>nd</sup> Recommendation. On the introduction of an efficient compulsory sexuality education program**

The UNESCO 2011 Estonia Study comparing sexuality education programs in six countries outlines a list of recommended measures that would help use education resources in an optimal way (UNESCO, 2011).

Good quality sexuality programs should be delivered with full-uptake in schools and then scaled-up nationally.

Extracurricular programs have a lower potential to be scaled up because of their voluntary nature and are therefore they are not recommended. However, they are seen as a learning stepping stone. In this regard, Romania already has a valuable learning resource through the Tineri pentru Tineri (Youth for Youth) Foundation. Tineri pentru Tineri is a voluntary based organization founded in 1991 which delivers peer to peer family life education on a national level, being active in several districts of Romania (Tineri pentru Tineri, 2017).

What the UNESCO 2011 Estonia Study recommends is the introduction of an intracurricular program. This type of programs were proven to be the most efficient in being scaled up, because they of their compulsory nature. Programs with maximum uptake in schools and

maximum coverage of schools in a country were proven to be the best solution from the efficiency point of view. There are precedents in having some form of intracurricular sexuality education in Romanian schools, both in biology class and in the counseling and education class, which are compulsory subjects, as well as in the non-compulsory school subject called health education.

In order to scale up a sexuality education program to regional and national level, the first recommended step, according to the UNESCO 2011 Estonia Study, reaching a full-uptake in schools by making sexuality education mandatory. So indeed, this would be another argument for a compulsory sexuality education program. In the last few years, NGO advocates for sexuality education in Romania have pushed in order for health education to be made compulsory in schools (Hotnews, 2014b). Youth-led organizations have at times objected to the burden of an entire new school subject being put on them in order to reach the goal of making sexuality education - which they find highly necessary - compulsory. So instead of speaking up for making health education compulsory, simply the introduction of a mandatory sexuality education program was advocated (Hotnews, 2015).

Therefore, the task of finding a solution to docking sexuality education to one of these three school subjects and making it mandatory has to be tackled.

An important recommendation in the UNESCO 2011 Estonia Study is that program managers should document programs steps and their effectiveness, especially when trying to expand the curricula to an integrated comprehensive program.

### **3<sup>rd</sup> Recommendation: On the structure of an efficient compulsory sexuality education program**

The UNESCO 2011 Estonia Study comparing sexuality education programs in six countries also outlines some structure aspects which make up a quality and effective sexuality education program, apart from its necessary compulsory and intracurricular nature (UNESCO, 2011).

First, since evaluated and effective sexuality education programs already exist, governments can save costs by implementing a new sexuality education program based on an existing model from another country. The country-wide, school-based, compulsory and intracurricular sexuality education program in Estonia has been chosen as a model for this paper because it has a similar socio-economic background to Romania, both being post-communist countries that did not have a sexuality education program before 1989. The program in Estonia was also proven to be highly cost-effective. Therefore, the sexuality education intervention in Estonia is the recommended model for a sexual intervention in Romanian schools. This applies both to the structure of the whole program, as well as for the taught content of the program.

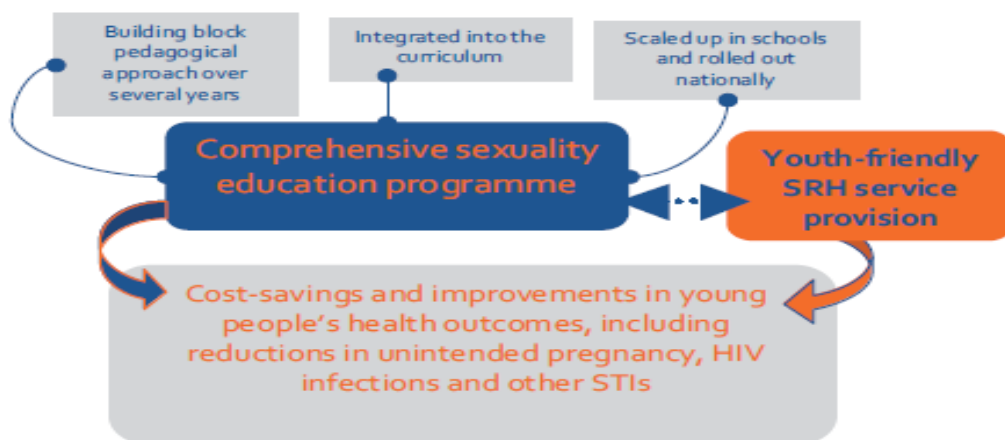
Class size is an important aspect of the cost per student for sexuality education, since teachers' salaries make up an important part of the costs of a program. The more students

are in the class, the lower the cost per student gets. At the same time, a balance has to be kept between better quality, which will imply fewer students per class, and lower costs, which would imply more students per class. A class should include around 20-40 learners. Sexuality education in Estonia takes place in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade, so the program introduced in Romania should also consider taking place at that age. Romania has an average of 25 learners per class in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade (Romanian Government Decision No. 9/2015 to amend Decision No. 72/2013), and would therefore fit in the learner/class recommendation.

The number of sexuality education lessons is also an important part of the cost per student, again, because of teachers' salaries strongly influencing total program costs. Shorter programs are less expensive, but also less effective. Between twelve to 20 sexuality education lessons are recommended, spread out across several years, with more than one class hour needed per lesson. In Estonia, pupils receive 24 class hours of sexuality education over the course three school years (5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade).

In introducing a sexuality education intervention, the UNESCO 2011 Estonia Study recommends to go beyond the goal of reducing unwanted health events that can be measured through hard outcomes. It is recommended to introduce a comprehensive sexuality education intervention, as this will have important non-health benefits with regard to previously mentioned soft outcomes, such as reducing gender inequality and sexual violence or improving interpersonal relations and personal decision making.

Figure 5 (UNESCO, 2011) shows the key characteristics of sexuality education programs and their potential to lead to improved health outcomes and optimal cost-effectiveness.



**Figure 5: Key characteristics of sexuality education programs and their potential to lead to improved health outcomes and optimal cost-effectiveness**

**4<sup>th</sup> Recommendation: On the steps of an intervention**

To develop and organize these key elements of a cost effective sexuality education program on national level in Romania, several program design steps are required. In taking these steps to design the sexuality education intervention in Romania, it is the author's

recommendation to use the *Guidance for Implementation for the Standards for Sexuality Education* (WHO Europe and German Federal Centre for Health Education, 2013), called from now on the WHO Europe Guidance. The WHO Europe Guidance maps out each element in designing a sexuality education intervention, from agreeing on the curriculum framework, building the syllabus, developing and implementation of teacher training, monitoring, evaluating, to the dissemination and promotion of the new sexuality education program.

The first steps in designing a sexuality education program for Romania will be briefly touched upon, as follows.

To begin with, the WHO Europe Guidance states that it is recommended that the decision on introduction of this intervention is officially taken by educational authorities at national level, but also involving bodies responsible for health and for young people at national and local levels. For Romania, this should be the Ministry of Education, working together with the Ministry of Health and the Ministry of Youth and Sport and their district-level bodies. As outlined in the introduction, sexuality education is viewed as an important priority on paper, in the national youth and health strategies. Moreover, sexuality education in school is compulsory by law in Romania.

Furthermore, as explained in the WHO Europe Guidance, the curriculum framework represents the guiding principles of sexuality education. The different syllabuses for the intervention – for example, both for teaching and for teachers’ training - will emanate from this framework. Therefore, an important prerequisite to it is the political will for sexuality education. At the same time, the work of developing the curriculum framework can bring to a clearer understanding of the role of sexuality education among national stakeholders.

Third, the curriculum framework is developed by the curriculum development group, whose role, close to the policy-making level, is, as stated in the WHO Europe Guidance, “to work out a common understanding of the rationale for sexuality education and its broad objectives (e.g. to empower students to make responsible decisions) ideally done in close cooperation with many actors and stakeholders, for example by holding social consultations.”

As explained in the WHO Europe Guidance, the composition of this curriculum development group is therefore crucial and should involve the whole range of national stakeholders. For sexuality education, stakeholders should be able to give input on curriculum development and pedagogy, adolescent health, ethics/religion and the teaching of health and humanities. Groups representing ethnic, sexual and special-needs minority groups should also be present, as well as people from parents’ and teachers’ organizations.

In the Romanian context, experts who have an overview of the already existing programs that have been until now present in school, be it in an intracurricular or extracurricular fashion, should be included. Outside experts who have worked in implementing nation-



wide sexuality education programs should additionally be invited. In this regard, experts from Estonia, as well as experts who have evaluated the program in Estonia, which is a model for Romania, are strongly recommended to be invited, as are experts from other European countries who have participated in intracurricular program developments.

Finally, and most importantly, young people themselves should be involved to respect the multicomponent approach. In the multicomponent approach, it is not only important to introduce comprehensive sexuality education and develop youth friendly sexual and reproductive youth services, but it is also important to create an enabling environment which would help young people fight for the sexual rights and to seek and receive sexuality education and sexual and reproductive health services (Rutgers, 2016).

As first steps in preparing for the development of a sexuality education program, the Romanian curriculum development group should, as explained in the WHO Europe Guidance, establish an agreed definition for sexuality education, look at the current status of sexuality education in the country, map all stakeholders, make sure they have clear understanding of the needs of children and young people, look at other sexuality education programs in other countries, draft an overview of learning objectives and set up smaller technical working groups.

In this regard, the author would like to emphasize that this present paper stands out as a comprehensive basis for facilitating the discussion of the curriculum development group in these first steps.

#### **5<sup>th</sup> Recommendation: On the misconceptions about sexuality education**

In Romania, the reluctance to support the introduction of sexuality education at the political level is primarily caused by the conservative climate in this post-communist Eastern-European Orthodox Country. At the same time, a lot of misconceptions about sexuality education exist. The most common is that sexuality education will enable an earlier debut of sexual life and increase promiscuity among young people. For the sake of completion, it has to be stated here that this is simply not true. The UNESCO *International technical guidance on sexuality education* debunks these and other such myths (UNESCO, 2009). The whole range of social benefits of sexuality education has been at large outlined in this paper. Moreover, this paper shows the potentially positive economic advantages of sexuality education.

In the purpose of gaining more support for the cause of sexuality education in Romania, it is therefore recommended that politicians and the general public be educated on these aspects. In the context of introducing a sexuality education intervention in Romanian schools, the more conservative as well as the more liberal stakeholders should be consulted in order to achieve a broad consensus as possible for the planned intervention.

## **6<sup>th</sup> Recommendation: On the limits of sexuality education in Romania**

Romanian has some structural equality and equity issues when it comes to who has access, not only to sexuality education in schools, but also to health services.

Although mandatory by law, inclusion in the school system is not at 100% in Romania. The specific school inclusion rate per age shows the percentage of pupils of a certain age out of the total population of that age that are included in the school system. The 2013/2014 specific school inclusion rate in middle school was 83.2% for 11 year olds, 90.5% for 12 year olds and 90.2% for 13 year olds. This can have several causes. For example, some 11 year olds may still attending primary school. But it also means that some of the children of the ages included in this paper's sexuality education intervention model (11, 12 and 13 year olds in the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> grade) are not attending school at all. There is a difference in the specific school inclusion rate between rural and urban, too. For example, 92% of urban 11 year olds were attending middle school, while only 76% of 11 year olds were attending middle school in rural areas. (Romanian Institute of Educational Sciences, 2015 )

Looking at the health system, throughout Romania, there is an inequitable distribution of health facilities and health care workers, while the population does not have enough knowledge about health care services (Viădescu et al., 2016). These structural problems are reflected in the secondary results of this paper, which seem to show that in 2015, 32,000 of births did not occur in DRG system, which includes the majority of Romanian hospitals, while 3,215 people living with HIV/AIDS did not receive their ART treatment.

It is therefore recommended that, when introducing a sexuality education intervention in Romanian schools that would link back the healthcare system, these structural problems in the system be recognized in order to not forget to protect the most vulnerable children and young people.

### **5.4. Conclusion**

The cost of introducing a country-wide, school-based, compulsory and intracurricular sexuality education program in Romania would be compensated through the reductions in medical costs that would be attained through the intervention.

Taking these results in account, in the context of the high need for sexuality education among young people in Romania, the development and introduction of a country-wide, school-based, compulsory and intracurricular sexuality education program is recommended. There are extensive international standards and frameworks that can be used as a basis for a sexuality education intervention. The sexuality education program in Estonia, a country with similar socio-economic background as Romania, should be taken in consideration as a suitable intervention model. Existing sexuality education infrastructures in Romanian schools should be also kept in mind. Finally, existing shortcomings in the Romanian educational and health systems should be taken into account when developing the recommended sexuality education program.

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## 7. Appendix

### 7.1. Calculation methodology for DRGs

The first type of data used in the cost analysis is DRGs. More specifically, the number of resolved cases per type of DRG, reported for each hospital in the Romanian DRG system (RODRGv1), in the year 2015, specifying the month of the patient's hospital release, for the age groups 15-19, 20-24 and total.

In order to calculate the cost of a single DRG case in a specific hospital, the following general formula is in use:

***Cost per 1 DRG case /hospital = the relative value of that specific type of DRG (RV) X the weighted case tariff (WCT) for that specific hospital***

The **relative value - RV** - of each DRG (Romanian „valoarea relativă a grupului de diagnostic – VR”), which can be found in Annex 23B II of each version of the The Application Norms of the Framework Contract is a fix value that has been calculated and does not change from year to year.

The **weighted case tariff – WCT** - (Romanian „tariful pe caz ponderat – TCP”) differs from hospital to hospital. This is why it is important to have the hospital code for a more precise calculation. Different from the DRG relative value, the weighted case tariff does change, from one version of the The Application Norms of the Framework Contract to the other. Since The Application Norms are not always published on the 1st of January, the weighted case tariff can change in the course of a year. It is the case of 2015. For the first three months of 2015, the version of The Application Norms as established by the Government Order 619/30.05.2014. Starting with the 01.04.2015, when the Government Order 388/186/2015 came into force, other weighted case tariffs applied. For this reason, only by knowing the exact patient release month in 2015 can the correct WCT be established.

For a better understanding of all the elements involved in calculating the cost per DRG, please see Table 15, which reflects the form in which the data set was delivered.

DRG Code	DRG Name	DRG RV	Hospital code	WCT until March 2015	WCT starting April 2015	Case Release Month (1 to 12)	Number of reported DRG cases per month	Number of reported DRG cases where patients were 15-19 year old at the time of hospital admission	Number of reported DRG cases where patients were 20-24 year old at the time of hospital admission
O1011	Birth through C-Section with catastrophic consequences	2.3123	AG05	1380	1475	8	5	3	1

**Table 15: The elements of calculating the cost per DRG**

### 7.2. Calculation methodology for Fee for service (FFS)

The prices for FFS medical services are listed in the List B3.2., Chapter I, and Annex 22 of each version of The Application Norms of the Framework Contract. Precisely like for the DRGs, since the Application Norms are not always published on the 1st of January, the costs for each service can change in the course of a year. For this reason, only by knowing the exact patient release month in 2015 can the correct value for the service be established. For a better understanding of all the elements involved in calculating a cost per service, please see Table 16, which reflects the form in which the data set was delivered.

ID Service Type	Name of service	Hospital chart closing month	Total no. of charts reported in 2015	No. of charts reported in 2015 where patients were 15-19 year old at the time when the chart was opened	No. of charts reported in 2015 where patients were 20-24 year old at the time when the chart was opened
5	Monitoring HIV/AIDS patients	1	5531	54	263

**Table 16: The elements of calculating the cost per service**

### 7.3. Calculation methodology for average costs per cases and for total costs

#### 7.3.1. Birth

Cost Unintended Birth 2015			Age group		
Data type	Formula	total	15-19 olds	20-24 olds	
DRG	Number of birth DRG cases O1011 + O1012 + O1013 + O1021 + O1022 + O3011 + O3012 + O3013	165,037	12,636	25,556	
	Total Cost DRG 2015	75,661,481 €	5,251,569 €	10,964,050 €	
	Average cost per birth case = average cost per DRG birth case	Total cost DRG /Number of DRG cases	458.5 €	415.6 €	429.0 €
	Total number of live births: Incidence. (via Eurostat)		197,491	18,633	37,760
	Total costs 2015	Average cost per case * Total number of live births	90,540,070 €	7,743,945 €	16,199,817 €

Table 17: Birth calculation overview. Incidence, Average cost per case and Total cost 2015

#### 7.3.2. Abortion

Cost Abortion 2015			Age group		
Data type	Formula	total	15-19 olds	20-24 olds	
DRG FFS	Number of hospital abortion cases DRG+FFS DRG: O1050 and O3030 FFS: Birth interruption	15,540	1,136	1,998	
	Total cost hospital abortion DRG+FFS	1,481,154 €	107,198 €	188,884 €	
	Average cost per hospital abortion case	Total cost hospital abortion DRG+FFS / Number of hospital abortion cases DRG + FFS	95.3 €	94.4 €	94.5 €
DRG	Number of cases DRG O3030 Abortion without procedures in the operation room	1,185	94	186	
	Total cost DRG O3030	97,950 €	7,663 €	15,378 €	
	Average cost DRG O3030	Total cost DRG O3030 /No DRG O3030 cases	82.7 €	81.5 €	82.7 €
	Total number of abortions: Incidence (via Eurostat)		70,885	6,431	13,216
	Total cost outer-hospital abortions	(Total number of abortions via Eurostat - Number of hospital abortion cases DRG + FFS ) * Average cost DRG O3030	4,574,711 €	431,653 €	927,499 €
	Total cost abortions	Total cost hospital abortion DRG+FFS + Total cost outer-hospital abortions	6,055,865 €	538,851 €	1,116,383 €
	Average abortion case	Total cost abortions/ Total number of abortions (via Eurostat)	85.4 €	83.8 €	84.5 €

Table 18: Abortion calculation overview. Incidence, Average cost per case and Total cost 2015

#### 7.3.3. Syphilis

Cost Syphilis 2015

Data Type	Formula	Age group			
		total	15-19 olds	20-24 olds	
DRG	Number of DRG cases which had, as a primary or secondary diagnosis, ICD codes related to syphilis (A50, A51, A52, A53), without congenital syphilis	1,835	92	126	
	Total cost syphilis DRG cases	871,924 €	23,239 €	51,651 €	
	Average cost per syphilis DRG case	Total cost syphilis DRG cases / Number of DRG cases related to syphilis	475.2 €	252.6 €	409.9 €
FFS	Total number of new syphilis cases 2015 : Incidence. (via Romania National Institute of Public Health )	949	87	118	
	FFS cost per service/trimester/insured person for Monitoring of primary genital syphilis and of secondary skin and mucous syphilis (via List B3.2., Chapter I, Annex 22 of the Application Norms of the Framework Contract)	29 €	29 €	29 €	
	Average cost per new syphilis case 2015	Average cost per syphilis DRG case + FFS Cost per service/trimester/insured person for Monitoring	503.8 €	281.2 €	438.6 €
	Total cost new cases 2015	Average cost per new syphilis case 2015 x Total number. of new syphilis cases 2015	478,104 €	24,331 €	51,964 €

**Table 19: Syphilis calculation overview. Incidence, Average cost per case and Total cost 2015**

### 7.3.4. HIV/AIDS

Cost HIV/AIDS 2015		Age group		
Data type	Formula	total	15-19 olds	20-24 olds
DRG	Number of HIV DRG cases S3010 + S3021 + S3022 + S3023	11,421	143	545
	Total Cost HIV DRG cases	15,866,957 €	186,425 €	704,721 €
	Average cost per HIV DRG case	Total cost HIV DRG cases / Number of HIV DRG cases	1,389 €	1,304 €
FFS	Total number HIV-AIDS monitoring service	61,674	514	2,258
	Cost per service/month/insured person	44 €	44 €	44 €
	Total cost HIV-AIDS monitoring service	Total number HIV-AIDS monitoring service x Cost per service/month/insured person	2,716,916 €	22,643 €
Evaluation Indicators National Program for	1. HIV Rapid Test			
	Number of HIV Rapid Tests	114,614	1,455	6,731
	Total cost HIV Rapid Tests	105,187 €	1,336 €	6,178 €
	Cost per test	Total cost HIV Rapid Tests/ Number of HIV Rapid Tests/	0.9 €	0.9 €

Prevention, Monitoring and Control of HIV/AIDS Infection  Data via Matei Balş Institute.	2. ELISA HIV Test				
	Number of Elisa HIV Tests		83,587	1,061	4,909
	Total cost Elisa HIV Tests		135,197 €	1,717 €	7,940 €
	Cost per test	Total cost Elisa HIV Tests/ Number of Elisa HIV Tests	1.6 €	1.6 €	1.6 €
	3. ART post-exposure prophylaxis				
	Number of patients receiving ART post-exposure prophylaxis		630	8	37
	Total cost ART post-exposure prophylaxis		96,107 €	2,131 €	7,274 €
	Cost per patient receiving ART post-exposure prophylaxis	Total cost ART post-exposure prophylaxis/ Number of patients receiving ART post-exposure prophylaxis	152.6 €	266.4 €	196.6 €
	4. ART treatment for HIV/AIDS patients				
	Number of patients receiving ART treatment		10,551	115	536
	Total cost ART treatment		61,413,477 €	480,326 €	1,607,346 €
	Cost per patient receiving ART treatment	Total cost ART treatment/ Number of patients receiving ART treatment	5,820.6 €	4,176.7 €	2,998.8 €
	5. non-ART prophylaxis				
	Number of patients receiving non-ART prophylaxis		500	6	29
Total Cost non-ART prophylaxis	Cost per patient x Number of patients receiving non-ART prophylaxis	220,264 €	2,797 €	12,936 €	
Cost per patient receiving non-ART prophylaxis		440.5 €	440.5 €	440.5 €	
6. ART genotypic resistance tests					
Number of ART genotypic resistance tests		3500	44	206	
Total Costs HIV Rapid Tests	Cost per test x Number of patients receiving non-ART prophylaxis	1,002,203 €	12,726 €	58,860 €	
Cost per ART genotypic resistance tests		286.3 €	286.3 €	286.3 €	
32 Years lifetime cost per model patient 1 + 30 + 1	Cost per HIV/AIDS patient in the first year + 30 years cost ART treatment for HIV/AIDS patients + Cost per HIV/AIDS patient in the last year of life	188,177.4 €	135,601 €	97,826 €	
Cost per HIV/AIDS patient 30 years of ART treatment		174,619 €	125,302 €	89,963 €	
Cost per HIV/AIDS patient in the first year	1 x ART post-exposure prophylaxis + 1 x Rapid Test + 1 x ELISA Test +1 x ART genotypical resistance test+ 1 x ART treatment for HIV/AIDS patients + 1 x 1 month monitoring	6,304 €	4,774 €	3,527 €	
Cost per HIV/AIDS patient in the last year of life	1 x ART treatment for HIV/AIDS patients+1 x 1 month monitoring +1 x DRG average	7,254 €	5,524 €	4,336 €	



	Total number of new HIV/AIDS cases 2015 : Incidence. (via Matei Balş Institute)		698	31	94
	Total cost 32 year lifetime expectancy model	Total number of new HIV/AIDS cases 2015 : Incidence x 188,177.4 €.	131,347,816 €	5,833,499 €	17,688,674 €

**Table 20: HIV/AIDS calculation overview. Incidence, Average cost per case and Total cost 2015**