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Title: Non-invasive prenatal testing: a survey of young (future) parents in Flanders

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Abstract

Aims: To explore the opinions of young (future) parents towards non-invasive prenatal testing.

Materials & Methods: A questionnaire was administrated.

Results: 1006 surveys were completed by visitors of 40 second-hand clothing fairs spread equally over Flanders (Belgium). The respondents expressed an overall positive opinion towards the use and implementation of a non-invasive prenatal test (NIPT). Most respondents claimed that they would test their unborn child for genetic disorders, even if this was to result in a termination of the pregnancy.

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Conclusions: The participants agreed nearly unanimously that NIPT must be offered to pregnant women with an increased risk of having a child with a genetic disorder, but they were also positive about extending NIPT screening to all pregnant women.

Keywords: Non-invasive, prenatal screening, NIPT, parent perceptions, genetic testing, stakeholder attitudes, genetic counselling.

Introduction

Non-invasive prenatal tests (NIPT) are increasingly being used to detect the most frequent chromosomal abnormalities, including trisomy 21 (Down syndrome), trisomy 18 (Edwards syndrome) and trisomy 13 (Patou syndrome). The test is based on the sequencing of cell-free DNA (cfDNA) in maternal plasma. [1] Part of the cell-free DNA circulating in the mother's blood is 'foetal' which allows the foetal DNA to be studied through the blood of the mother, without having to use an invasive technique.

Traditionally, prenatal screening is a two-phase procedure. Firstly, the pregnant woman undergoes a risk assessment screening based on maternal age, a nuchal translucency measurement, and biochemical markers. Secondly, if the women are shown to be at increased risk, they are asked if they want to undergo a confirmatory testing done through amniocentesis or chorion villus sampling, in order to allow for a karyotyping or a chromosomal microarray. These procedures, however, are invasive and involve a modest risk of miscarriage. Because, up until now, there was no valid alternative to this test, numerous women would undergo this invasive test without actually carrying an affected foetus. [2] The introduction of NIPT is increasingly altering the existing prenatal screening offer, whereby the number of invasive procedure can be reduced.

Although some studies have been investigated the general public's attitudes and opinions towards NIPT [3-5], no studies have been performed in Belgium. Therefore, the objective of this study was to explore the opinions and knowledge of young parents towards NIPT in Belgium. In this study, we aimed to understand parents' attitudes towards the uptake of NIPT testing and the most suitable way to offer the test; their opinions about the acceptable cost of a test; their expectations about the diagnostic relevance of such test; their views about the most

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suitable health care professionals in informing and counselling about NIPT; and their views on the consequences that this type of test could have for society. Results from this study might inform decision-makers regarding societal perceptions or opinions towards NIPT.

Methods

Respondents

Respondents were recruited at second-hand clothing fairs in Flanders (Belgium). At these fairs, second hand clothing and supplies for children and toddlers in good condition (such as toys, or cribs) are sold at affordable prices. For this reason, these fairs attract mostly young parents making them the ideal place to administer the surveys. From 8 August 2015 to 31 October 2015, 40 fairs in total, spread equally all over Flanders, were visited by the researchers. Respondents were approached by one of the researchers with a request to participate in the survey. As an important inclusion criterion, only Dutch-speaking respondents took part in the surveys.

Questionnaire

The questionnaire used for data collection was partly based on surveys of previously conducted studies about NIPT (such as studies conducted in USA [6], Japan [7], UK [8]) and furtherly developed by the researchers. The questionnaire was developed to grasp the participant's opinions towards several aspects of NIPT such as: [i] the overall opinion of the participants regarding NIPT, [ii] the respondents' willingness to undertake and pay for the test, [iii] their opinions and expectations over the extended use of NIPT. The questionnaire was tested first in a pilot.

Before the administration of the survey, the respondents were given thorough background information regarding the prenatal examination methods involved in NIPT and all participants

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had the possibility to withdraw from answering certain questions. The respondents were guided through a structured interview by AB, EB, SV and responses were recorded on paper and entered in an online system afterwards.

Statistical analysis

Data analysis was performed using two non-parametric tests: the Mann-Whitney-U test and the Kruskal-Wallis test. The Mann-Whitney-U test was employed for dichotomous demographic variables: *gender, extent of religious involvement, age, already having children, being pregnant or not, and previous administration of a NIPT test*. Kruskal-Wallis test was used for the variable *level of education* (i.e. High school, Bachelor degree, Master degree).

Results

Sample

Overall, 1006 respondents were interviewed. 28 questionnaires were excluded because another person (usually the partner) intervened during the interview process and started to answer instead of the interviewed person. This resulted in 978 remaining questionnaires. The demographic characteristics of the respondents are presented in Table 1. Overall, the average age of the participants was 33 years. 65,13% of the respondents in this survey were 35 or younger. Females comprised 73,62% of the respondents. Men were less inclined to accept the invitation to participate in the survey than women.

Regarding the educational level, 38,45% had a Bachelor degree and 25,36% had a Master level degree. More than half of the respondents (54,60%) had a religious affiliation. The rest identified themselves as non-religious. The majority of the respondents (84,05%) already had

children. With regard to the NIPT, less than one-tenth of the participants (9,49%) had already taken a NIPT during the current or previous pregnancy.

Opinions towards NIPT

An overview of the respondents' opinions regarding the NIPT test is presented in Table 2. The majority of the respondents agreed that NIPT is a major advantage for prenatal care (88,96%), with older participants (born before 1981) being more likely to agree ($p=0,0295$). Most respondents (95,54%) shared the opinion that prospective parents should have the choice whether they want or not to take the NIPT when offered during pregnancy. Parents agreed with this opinion more firmly than people without children ($p=0,0143$). 62,99% of the respondents also agreed that refusing NIPT during pregnancy should not be considered an irresponsible behavior for a future parent. The survey indicated that the respondents' opinion in this matter differed according to some demographic characteristics. Young age ($p=0,0013$), higher educational level ($p=0,0003$), already having children ($p=0,0066$), and expecting a child ($p=0,0002$) were associated with greater disagreement.

The majority of the respondents (92,74%) agreed that NIPT should be offered to women with an increased risk of having a child with a genetic disease. Again, parents (93,31%) were more likely to agree with this statement than people without children (89,71%) ($p=0,0366$) while participants who were expecting a baby, were more likely to disagree ($p=0,0046$). A high proportion of the respondents (74,95%) were of the opinion that NIPT should be offered to all pregnant women, regardless whether they are at increased risk. People who were expecting a child were less likely to agree with this statement ($p=0,0269$).

Preferred healthcare providers informing about NIPT

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Almost all participants indicated the gynecologist would be the most suitable practitioner to provide comprehensive information about NIPT (99,78%). (See Table 3) The vast majority of the participants believed that the clinical geneticist and the general practitioner are both highly qualified to provide advice on NIPT, 91,52% and 88,44% respectively. Midwives/nurses and preconception counsellors were considered slightly less appropriate by the participants, 77,40% and 73,21% respectively. Pharmacists were clearly considered less suitable to provide information about NIPT (20,45%).

Test uptake and willingness-to-pay

As shown in Table 4, half of the respondents (57,46%) expressed a willingness to undergo a NIPT test for Down syndrome or other genetic disorders, even if this may lead to termination of the pregnancy. Older respondents were more likely to agree with this statement ($p=0,0006$). 83,84% of the participants stated that they would undergo a NIPT assuming that it was given free of charge. In comparison, 59,61% of the respondents were willing to pay € 150 (i.e. suggested price in report of the Belgian Health Care Knowledge Centre) for a NIPT test and only one third of them (33,12%) was willing to pay € 390 (i.e. the price at which the test was available during the questionnaire study), with older respondents being more likely to pay € 150 ($p=0,0052$) or € 390 ($p=0,0003$) for the test.

Opinions over the composition of the NIPT test

Regarding the acceptability of the composition of the NIPT test (Table 5), the vast majority of the participants (90,90%) shared the opinion that NIPT should be used to detect untreatable severe conditions that occur during childhood. Moreover, most of the respondents were positive towards the screening of conditions that are treatable both during pregnancy (94,89%) and after birth (88,45%). Half of the respondents (48,67%) were of the opinion that NIPT should also

include the screening of untreatable severe conditions that occur later in life (e.g. breast cancer), men ($p=0,0015$) and respondents who weren't expecting a baby ($p=0,0072$) being more likely to agree. The level of education was found to be a determining factor in this regard: participants with a bachelor degree ($p=0,0038$) or with a master degree ($p=0,0009$) were less likely to agree with such offer of NIPT than respondents with a lower education. The majority of the respondents (67,18%) agreed that a NIPT could lead to report potential cancers in the mother identified during the pregnancy. This opinion was particularly shared by men ($p=0,0011$) and younger participants ($p=0,0100$). Almost all respondents (93,56%) were of the opinion that it is not acceptable to use NIPT for non-medical reasons (e.g. eye color). Regarding sex determination, almost half of the respondents (42,74%) were of the opinion that it should be permissible to determine the sex of the child using NIPT for medical reasons (e.g. Duchene muscular dystrophy).

Possible implications of the extended use of NIPT

As shown in Table 6, half of the respondents (50,51%) agreed that the implementation of NIPT could possibly lead to more pregnancy terminations, with more educated respondents, both with bachelor and master degree, being more likely to agree with the statement ($p=0,0247$). The majority of the respondents (76,79%) supposed that the use of NIPT will cause fewer births of children bearing a condition detectable by the test. Women agreed more strongly than men ($p=0,004$). The respondents' opinions were divided as to the question whether NIPT would result in a lower acceptance of society toward people with detectable disorders (e.g. Down syndrome): 31,29% of the respondents agreed and 36,00% disagreed. Approximately half of the respondents (54,09%) believed that the uptake of NIPT test will be more thoughtless given that it only involves a blood test. Absence of previous children ($p=0,0221$), absence of

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pregnancy ($p=0,0004$), and younger age ($p=0,0369$) led to more agreement with this statement. Furthermore, almost a half of the participants (44,89%) believed that the use of NIPT will result in increased social pressure for women to undertake the test during pregnancy.

Discussion

From this study, it emerged that parents and prospective parents have a positive attitude toward the NIPT and they believe it to be a major advantage in prenatal care. As described in a focus group study performed by Farrell *et al.*, pregnant women consider NIPT as superior to other conventional prenatal screening techniques and they strongly value its accuracy, early timing, safety, non-invasiveness and ease of testing [9]. The advantages enumerated by Farrell and colleagues might also explain the positive attitude of our participants towards NIPT.

According to our results, Flemish young people were in fact very open to the possibility to undergo NIPT testing during their pregnancy. This is a very positive result for this technology if we take into account that only a small percentage of them had already had firsthand experience with the test during a previous pregnancy. This positive attitude can be also found in the results regarding to whom NIPT should be offered. While almost every respondent agreed that NIPT should be accessible to pregnant women with an increased risk of having a child with a genetic condition, the majority of the respondents also agreed that NIPT should be offered to all pregnant women. Moreover, participants also expressed the opinion that NIPT should be only used for medical purposes and that its non-medical potential – like the determination of the sex or of the color of the eyes of the unborn child – should not be exploited. All of these attitudes indicate a significant amount of confidence and reliance in the diagnostic value of this state of the art genetic testing technology. Regarding the gatekeeping of the test, in May 2017, the Belgian Minister of Health also announced that the NIPT would be offered to all pregnant

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women. This decision in line with the recommendations that can be found in the recently published report of the Nuffield Council on Bioethics on the ethical issues of non-invasive prenatal testing [10].

Even though they felt NIPT technology to be an advantage in prenatal care, freedom of choice in undertaking the test was considered crucial by the participants of this study. This is in line with the result of other similar studies [11, 12] and it is in line with the opinion shared by the majority of the participants that it is not an irresponsible behavior not to undertake the test when offered. However, as NIPT is slowly being implemented, the choice of undergoing or refusing NIPT must be based on complete, comprehensive and thorough information about the test itself. As noted by Piechan *et al.*, the rapid evolution of NIPT is posing challenges to the understanding of the advantages and limitations of prenatal screening. Informed choice and knowledge regarding both traditional screening methods and NIPT are fairly low among pregnant women [13]. To this end, the development of appropriate counseling from the involved practitioners is desirable to achieve fully informed choice by patients [12].

Our study also inquired about the respondent's preferences among potential information providers on the NIPT. We observed a strong support for medical specialists, with a higher preference for the gynecologist than the clinical geneticist. This result is in line with most of the literature regarding the administration of prenatal genetic testing in which there is a high tendency in underlying that such test should be administrated exclusively through specialist services that are skilled in pre- and post-test counselling [15,17,14]. Interestingly the study also showed a high preference amongst the respondents for the general practitioner as a healthcare professional suited to give substantial information on the NIPT. A study from Croker *et al.*, reported that patients generally express definite confidence and trust in their GP and this is

mainly due to interpersonal reasons [14]. The feeling of having one's problems taken seriously and being treated with care and concern are highly appreciated by patients as foundations of the relationship of trust between them and their healthcare providers [14]. In this regard, as noted also by the study of Hill *et al.*, the general practitioner, as a highly trusted and accessible health professional, should be given a proper training about NIPT in order counsel their patients appropriately when needed [8]. Most respondents felt that pharmacists were not suitable to inform patients regarding NIPT.

With regard to the willingness to undertake the NIPT test, not considering the cost, our results show that half of the participants would test their unborn child for genetic disorders during their pregnancy, or the pregnancy of their partner, even if this could lead to pregnancy termination. We also found the main discriminant in this judgement to be age, with older respondents being more likely to consider the test. Interestingly, religion didn't seem to play a key role in this particular pronouncement. This finding is in contrast with a study from Allum *et al.* [15], who concluded that religious people are less likely to support genetic testing, a discriminatory factor that was not found in our study. It will be interesting to explain this difference in a future research by investigating if the secularization of society in Flanders, compared with other European countries such as the UK, might contribute to this circumstance.

Regarding the cost of the test, we found that the vast majority of the participants would undergo NIPT if the test was offered for free or for less than 150€, but a significant smaller percentage of the participants were willing to pay the actual cost of the test (390€ at the moment the survey were taken). This indicates that the higher the cost of the test the less willingness participants showed in undertaking the test. As from July 2017 however, NIPT test is fully reimbursed in Belgium by the public health insurance, mandatory for every citizen, dropping the cost of the

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test for pregnant women to 8,68€. From our results, we expect this will likely increase the number of actual requests for NIPT.

The results of the study showed a very positive attitude among the respondents towards the potentiality of NIPT to detect untreatable single gene disorders (e.g. cystic fibrosis). Similar findings have been reported in numerous articles regarding the attitude of health care professionals and carriers of single gene disorders towards NIPT [8, 16-19]. Additionally, our findings show that the majority of participants also had a positive attitude towards the use of NIPT to detect disorders that can be treated during or after the pregnancy. On the contrary, only half of the participants expressed positive attitudes regarding the screening for severe untreatable disorders that may occur later in life (e.g. breast cancer). A relevant study from Kooij *et al.* [20], that surveyed both pregnant women and female medical students, showed that half of the pregnant respondents agreed that NIPT can be an important asset in prenatal screening for congenital breast cancer. On the other hand, the study also interestingly pointed out that less than a fifth of the medical students involved in the research supported this judgement ($p < 0,05$). In our study, as well, education was found to be a discriminant factor in this regard. An explanation might be that people with higher qualifications, such as graduates and medical students, have a better knowledge and understanding of the negative effects that extended screening could generate [20]. Additionally, according to our results male gender was associated with a higher agreement with this use of NIPT. This circumstance might be explained by a study of Gason *et al.* [21] According to their results, females generally display a higher level of knowledge regarding prenatal genetic testing, reason why they might better grasp the negative implications of screening extension to untreatable disorders. Moreover, women are found more likely to take responsibility and give more pondered judgment for decisions that include or affect reproduction. [21]

Our respondents voiced some opinions over the possible ethical and social implications of the extended use of NIPT. Half of the respondents expressed the concern that NIPT will lead to more pregnancy terminations and a drop in the number of babies born with a genetic defect. This is a commonly spread concern that was found in many other similar studies [6, 22, 23]. A study from Kellog *et al.* indicates that the tone and content of the information provided to the parents at the time of the screening might influence their decision to terminate pregnancy in case of adverse findings [6]. Participants also expressed the concern that NIPT screening will result in a lower acceptance or social discrimination of people affected by disorders detectable by NIPT, such as Down syndrome (a concern expressed also in other studies [6, 24-28]). In their study, Farrimond and Kelly found a strong belief regarding the normality of human diversity. According to this belief, diversity is a valuable and beneficial feature of society, even if it is expressed as a genetic disorder, and NIPT, in this regard, would be a) a form of discrimination against disabled people and b) an utterance of eugenic practices that will eventually prevent social acceptance of people carrying genetic syndrome. [22] However the opinion of the respondents of our study over the matter was fairly divided with the same percentage of participants showing opposite attitudes and almost two fifth of the participants not expressing an opinion on the subject. This result is a clear statement of the delicacy of the matter and a strong indication that more counselling regarding prenatal genetic testing is needed. According to our results, another concern that the respondents have is that the uptake of NIPT test will be more thoughtless of the implications, given that it only involves a blood test. This is in line with the idea, expressed in a study from the United Kingdom [16], that blood tests are generally taken less seriously than invasive tests by pregnant patients and that, on the long term, this practice might lead to an increased social pressure for women to uptake genetic testing during pregnancy - a concern that emerged also in our study. Participants who were

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pregnant, or their partners, considered the routine uptake of NIPT a more important issue than other participants. An explanation of this might be the fact that pregnant couples are generally better and more extensively informed on prenatal care [25].

Limitations

There are some limitations to this study. Since the study was carried out at second-hand fairs, only a specific section of the population was surveyed and the profession of the participants was not recorded. Moreover, the overall positive atmosphere of the second-hand clothing fairs might have influenced the way participants reflected on the questions. Parents, during a planned day of shopping, were asked to reflect on a difficult issue and to understand the technological aspects of NIPT technology. Occasionally, a participant had a hard time in understanding and responding to the questions. However, this doesn't disqualify most of the responses. Differences in attitudes between health care professionals and other participants could not be observed. Therefore further research has to be carried out to investigate the opinion of the general population in Flanders and Belgium. Moreover statistical comparison between the age groups may not have been robust as the older group was smaller. This however is in line with the aim of the study that was investigating the attitude of young parents.

Conclusion

Overall, our results showed that our respondents believe that NIPT is an advantage for prenatal care. Freedom of choice was considered a crucial factor. The participants agreed nearly unanimously that NIPT must be offered to pregnant women with an increased risk of having a child with a genetic disorder but they also were positive about extending NIPT screening to all pregnant women. Concerns were expressed by the respondents, such as a potential increased number of pregnancy terminations, lower acceptance for people carrying genetic disorders by

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society, routine test update and social pressure to undertake the test. The existence of such concerns indicates the need for adequate policy and regulations with regard to the NIPT test and for implementation of counselling practices in order to safeguard prospective parents and guide them into making informed decisions. To the best of our knowledge this is the first study that has investigated the attitudes of parents toward this test in Belgium and it will be a consistent addition to the framework that is slowly building around this technology. It is therefore important to continue monitoring the attitudes of parents towards non-invasive prenatal test as NIPT is increasingly implementing and it will soon become a routine practice in obstetrics.

Executive Summary

- Non-invasive prenatal tests (NIPT) are increasingly being used to detect the most frequent chromosomal abnormalities, including trisomy 21, 13, and 18.
- Public attitudes towards NIPT help inform policies regarding the provision of NIPT
- 1006 respondents (young or prospective parents) were recruited at second-hand clothing fairs in Flanders (Belgium)
- The majority of the respondents agreed that NIPT is a major advantage for prenatal care.
- The gynecologist, followed by the clinical geneticists and the general practitioner, were considered to be the most suitable practitioners to provide comprehensive information about NIPT.
- The detection of severe untreatable disorders that occur later in life (e.g. breast cancer) through NIPT was appreciated by only half of the respondents.
- The respondents' opinions were divided as to the question whether NIPT would result in a lower acceptance of society toward people with detectable disorders.

Financial & competing interests disclosure

This research was performed within the setting of a master dissertation. The authors have no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. No writing assistance was utilized in the production of this manuscript.

Ethical conduct of research

The study was approved by the local institutional review board for master dissertations at the KU Leuven/ UZ Leuven. Oral informed consent was obtained from all participants. Participants could withdraw at any moment during the interview. No personal identifying information was collected. The study was performed in accordance with local institutional guidelines and generally accepted principles for the ethical conduct of survey research.

References of Interest

****1.** Dondorp W, De Wert G, Bombard Y *et al.* This report provides recommendations regarding responsible implementation of prenatal screening using non-invasive prenatal testing

****10.** Nuffield Council on Bioethics. This report is the most recent report discussing the ethical challenges of NIPT.

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Table 1: Overview of the characteristics of the young (future) parents

Socio-demographic characteristics	Breakdown of respondents
Age	
• 35 and younger	65,13% (n=637)
• 36 and older	34,87% (n=341)
• Average age	33
• Range date of birth	1969-1996
Sex	
• Woman	73,62% (n=720)
• Man	26,38% (n=258)
Qualifications	
• High School	36,20% (n=354)
• Bachelor degree	38,45% (n=376)
• Master degree	25,36% (n=248)
Religious	
• Actively or relatively actively religious	54,60% (n=534)
• Not religious	45,30% (n=443)
Do you have children?	
• Yes	84,05% (n=822)
• No	15,95% (n=156)
Are you (or your partner) pregnant?	
• Yes	21,17% (n=207)
• No	78,83% (n=771)
Have you (or your partner) undergone a NIPT before?	
• Yes	9,41% (n=92)
• No	90,59% (n=886)

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Table 2: General opinions towards NIPT

Statement	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
I believe that NIPT is a major advantage for prenatal care.	0,61% (n=6)	2,56% (n=25)	7,87% (n=77)	33,02% (n=323)	55,93% (n=547)
When offered NIPT during a pregnancy, everybody should have the choice whether they want to undertake the test or not.	1,43% (n=14)	1,94% (n=19)	4,09% (n=40)	25,46% (n=249)	67,08% (n=656)
Refusing NIPT is an irresponsible behavior for a future parent.	30,98% (n=303)	32,00% (n=313)	24,34% (n=238)	6,95% (n=68)	5,62% (n=55)
NIPT should be offered to pregnant women with an increased risk of having a child with a genetic disease.	0,72% (n=7)	0,72% (n=7)	5,83% (n=57)	29,35% (n=287)	63,39% (n=620)
NIPT should be offered to all pregnant women, regardless of whether they are at increased risk.	2,86% (n=28)	6,13% (n=60)	16,05% (n=157)	27,71% (n=271)	47,24% (n=462)

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Table 3: Preferred healthcare providers informing about NIPT

Statement	Not at all suitable	Less suitable	Neither appropriate, nor inappropriate	Suitable	Very suitable
Is the gynecologist suitable to provide information about NIPT?	0,00% (n=0)	0,10% (n=1)	0,10% (n=1)	12,67% (n=124)	87,11% (n=852)
Is the general practitioner suitable to provide information about NIPT?	0,72% (n=7)	4,50% (n=44)	6,34% (n=62)	46,42% (n=454)	42,02% (n=411)
Is a preconception consultation suitable to provide information about NIPT?	1,64% (n=16)	12,47% (n=122)	12,68% (n=124)	43,05% (n=421)	30,16% (n=295)
Is the midwife/nurse suitable to provide information about NIPT?	1,23% (n=12)	9,51% (n=93)	11,86% (n=116)	45,19% (n=442)	32,21% (n=315)
Is the clinical geneticist suitable to provide information about NIPT?	0,41% (n=4)	2,97% (n=29)	5,11% (n=50)	34,36% (n=336)	57,16% (n=559)
Is the pharmacist suitable to provide information about NIPT?	17,18% (n=168)	41,41% (n=405)	20,96% (n=205)	15,03% (n=147)	5,42% (n=53)

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Table 4: Test uptake and willingness-to-pay

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
During my pregnancy, or the pregnancy of my partner, I would test my unborn child for the risk for Down or other genetic disorders, even if this may lead to termination of the pregnancy.	8,69% (n=85)	17,59% (n=172)	16,26% (n=159)	31,39% (n=307)	26,07% (n=255)
In this or a next pregnancy, or the pregnancy of my partner, I would undergo a NIPT when offered for free.	3,37% (n=33)	4,19% (n=41)	8,59% (n=84)	23,21% (n=227)	60,63% (n=593)
In this or a next pregnancy, or the pregnancy of my partner, I would undergo a NIPT test if it cost € 150.	7,67% (n=75)	11,25% (n=110)	21,47% (n=210)	26,99% (n=264)	32,62% (n=319)
In this or a next pregnancy, or the pregnancy of my partner, I would undergo a NIPT test if it cost € 390.	16,97% (n=166)	24,64% (n=241)	25,26% (n=247)	15,64% (n=153)	17,48% (n=171)

Table 5: Statements concerning the acceptability of the composition of the NIPT test.

Statement	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
I think it is acceptable to use NIPT to detect untreatable severe conditions which occur during childhood (e.g. cystic fibrosis).	0,72% (n=7)	2,45% (n=24)	5,93% (n=58)	27,71% (n=271)	63,19% (n=618)
I think it is acceptable to use NIPT to detect conditions for which a treatment during pregnancy is available.	0,51% (n=5)	1,02% (n=10)	3,58% (n=35)	29,35% (n=287)	65,54% (n=641)
I think it is acceptable to use NIPT to detect condition for which a treatment after birth is available.	0,82% (n=8)	3,68% (n=36)	7,06% (n=69)	30,27% (n=296)	58,18% (n=569)
I think it is acceptable to use NIPT to detect severe conditions for which no treatment exists and which occur later in life.	13,09% (n=128)	19,43% (n=190)	18,81% (n=184)	20,65% (n=202)	28,02% (n=274)
I think it is acceptable to use NIPT for non-medical reasons (e.g. color of eyes).	78,22% (n=765)	15,34% (n=150)	0,82% (n=8)	5,62% (n=55)	0,00% (n=0)
I think it is acceptable to use NIPT to detect whether the mother has potential cancers.	8,08% (n=79)	7,46% (n=73)	17,28% (n=169)	30,88% (n=302)	36,30% (n=355)
If there are medical reasons, I think it is acceptable to use NIPT to determine the sex of the unborn child (e.g. in sex-linked conditions such as Duchenne muscular dystrophy).	6,13% (n=60)	5,01% (n=49)	12,17% (n=119)	36,61% (n=358)	6,13% (n=60)
I think it is acceptable to use NIPT to determine the sex of the unborn child, even when there are no medical reasons to do this.	67,38% (n=659)	14,93% (n=146)	9,20% (n=90)	4,29% (n=42)	4,19% (n=41)

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Table 6: Statements about the consequences of NIPT

Statement	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
NIPT will lead to more pregnancy terminations.	4,50% (n=44)	12,07% (n=118)	32,92% (n=322)	38,96% (n=381)	11,55% (n=113)
NIPT will cause fewer births of children with a condition, that can be detected by NIPT.	1,43% (n=14)	7,16% (n=70)	14,62% (n=143)	56,44% (n=552)	20,35% (n=199)
NIPT will result in a lower acceptance of society toward people with disorders detectable by NIPT	10,33% (n=101)	25,77% (n=252)	32,62% (n=319)	25,26% (n=247)	6,03% (n=59)
NIPT will be used more thoughtless given it only involves a simple blood test.	7,67% (n=75)	20,14% (n=197)	18,10% (n=177)	40,49% (n=396)	13,60% (n=133)
NIPT will result in an increased social pressure for pregnant women to undertake the test.	8,69% (n=85)	23,31% (n=228)	23,11% (n=226)	34,36% (n=336)	10,53% (n=103)