

Efficacy of a school-based intervention to influence attitudes about future parenting among Swedish youth with intellectual disability: An RCT study

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Abstract

Background: The study aim was to investigate the efficacy of an intervention designed to provide a basis for informed choices about future parenthood to special upper secondary school students with intellectual disabilities.

Methods: A randomised trial with a waiting list control group was used. In total, 108 special upper secondary school students with mild or moderate intellectual disabilities, age 16–21 years, provided informed consent and participated. The intervention included education using the Parenting Toolkit and a Real Care Baby simulator. The analyses included 91 students (intervention group $n = 46$, 24F/22M; control group $n = 45$, 26F/19M).

Results: The result showed that intervention group changed their attitudes to future parenting, from 'do not know' to 'know', significantly more than control group. The intervention increased knowledge levels in the intervention group.

Conclusions: The intervention group showed increased ability to make informed choices and decisions about parenthood.

KEYWORDS

intellectual disabilities, intervention, parenting, RCT, special school, student

1 | INTRODUCTION

In 2006, the United Nations confirmed that individuals with intellectual disabilities have the right to become parents (Convention on the Rights of Persons with Disabilities, 2007). Involuntary sterilisation of both men and women with intellectual disabilities occurred in Sweden from 1935 to 1975 (Svensk författningssamling, 1934, p. 171). A Swedish study has described involuntary sterilisation of women with intellectual disabilities after childbirth or abortion (Kollberg, 1989). Intellectual disability is internationally described as a permanent, life-long condition, defined as significant limitations in both intellectual functioning and adaptive behaviour, both onset during the developmental period (i.e., before 18 years of age)

(World Health Organization, 2019). Individuals with intellectual disabilities make up a heterogenous group with both strengths and limitations but generally have difficulties in abstract thinking, in generalisation and comprehending abstract and complex information (Girimaji & Pradeep, 2018; World Health Organization, 2019). Related to these difficulties, individuals with intellectual disabilities often need longer time and/or individualised support to learn new things as well as to make informed choices and to make independent decisions (Hickson & Khemka, 2013). However, with individualised support that also focuses individual strengths such as for example motivation and social skills, the actual functioning in everyday life does not necessarily have to be limited (Schalock et al., 2018).

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Swedish studies have shown that early pregnancy is more common in adolescent girls with mild or moderate intellectual disabilities than in other girls (18.4% vs. 3.3%) (Höglund et al., 2012a, 2012b). Other studies have described less use of contraceptives in girls with intellectual disabilities (Höglund & Larsson, 2019), which may lead to more unplanned pregnancies and not being prepared for what parenthood entails (Höglund et al., 2012a; Sedgh et al., 2015). Further, early pregnancy is associated with parenting difficulties and increased risks for mothers, such as poor mental health and low socioeconomics. Pregnancy later in life may serve as a protective factor, lowering these risks (Wahn & Nissen, 2008). Thus, a main priority is avoiding unplanned pregnancies and postpone parenthood among teenagers and young adults with intellectual disabilities.

Previous studies have described parenting as connected to being an adult and taking on an adult role, which might make parenthood important for mothers with intellectual disabilities (Janeslätt et al., 2019; Rosqvist & Lövgren, 2013). In pregnancy, women with intellectual disabilities prefer support from caregivers who are perceived as non-judgmental and tend to avoid contact with individuals perceived as a threat, that is, authorities (Potvin et al., 2019). Some studies describe that women with intellectual disability received positive support from midwife and doula, respectively, during pregnancy and postnatally (Höglund & Larsson, 2014; McGarry et al., 2016). Women with intellectual disabilities have often struggled for motherhood and suffer from increased vulnerability due to their diagnosis, leading to fear of losing custody of their child (Höglund & Larsson, 2013). Children born to parents with cognitive limitations are more often placed in foster care (30%–60%) (Booth et al., 2006; Emerson et al., 2005; Tøssebro et al., 2017). Mothers with intellectual disabilities who have children placed in out-of-home care may experience this as a threat to their identity and need to adjust their maternal role (Janeslätt et al., 2019). Further, the need for support in these situations is rarely met and, if provided, seldom adapted to the mother's cognitive abilities. Women with intellectual disabilities may have difficulties creating long-term relationships and establishing a family (Murphy & O'Callaghan, 2004) and be less likely to cohabit with their child's father than women without intellectual disabilities (Höglund et al., 2012a; Höglund et al., 2012b). Moreover, women with intellectual disabilities have a higher risk of being exposed to abusive treatment, violence and exploitation (Kuosmanen & Starke, 2015).

Knowledge exists on how to adapt information to individuals with intellectual disabilities, for example, through step-by-step instructions and pictures depicting daily routines and tasks (Azar et al., 2013; Gillespie et al., 2012; Pearson et al., 2019). Behaviour-based interventions and methods used in a structured manner have been shown to be more effective in promoting parental skills than tutorial booklets or ordinary, non-adapted support from social services (Azar et al., 2013; Feldman, 1994; Wade et al., 2008; Wilson et al., 2014). Furthermore, studies have demonstrated the importance of providing simulated experiences of parenting skills to complement adapted knowledge as a basis for informed decisions and insights (Feldman, 1994; Feldman et al., 1989, 1999)

Few intervention studies have been performed among students with intellectual disabilities and most of the interventions concerning parenting have targeted parents of children or youths with intellectual disabilities, aiming to improve their ability to cope and communicate with their children and reduce parental stress. Some interventions are directed at parents with intellectual disabilities with an aim to improve parent-child interactions (Coren et al., 2018; Hamby et al., 2019; Hodes et al., 2018) or alleviate parenting stress (Hodes et al., 2017). Studies focusing on young people with intellectual disabilities have covered early interventions for behaviour problems in children with intellectual or developmental disabilities (Einfeld et al., 2013; Neil & Liesemer, 2020), a school-based intervention for developing listening and speaking skills in children with intellectual disabilities (Kalgotra & Warwal, 2019) and support for social development (McCollow & Hoffman, 2019). One recent study shows that participants with intellectual disabilities who recalled a more positive upbringing and care had stronger support networks, and reported greater parenting role satisfaction and emotional warmth in their parent-child-interactions, and thus parenting must be understood in a context in which supportive networks play an important role (McConnell et al., 2022). Another recent study shows that the children's needs and the parental capacity to meet those needs are the focus of the assessment in the investigatory processes of social workers, not the parent's disability, and key factors are adapting communication and offering support (Norlin & Randell, 2022).

Parental self-efficacy and responsiveness are two protective factors that have been linked to better outcomes among parents of infants (Mihelic et al., 2018). Consequently, it is important to find ways to support and equip young people with intellectual disabilities with adequate knowledge in the process of making a decision on parenthood. There is still limited knowledge about how interventions can prepare young people with intellectual disabilities for making such a decision. More knowledge is needed concerning youths with intellectual disabilities and how to prepare them for future parenting.

To the best of our knowledge, intervention studies concerning future parenting in youths with intellectual disabilities are scarce. A promising group intervention directed at young people, aimed at providing them with knowledge about parenting to facilitate their process of deciding about future parenthood, was presented in a feasibility study (Janeslätt et al., 2018). A school-based study, in which students with intellectual disabilities were interviewed, showed that the group intervention could promote an informed decision of future parenthood (Randell et al., 2020). The intervention consists of adapted knowledge about parenting in education materials, combined with actual experiences of caring for a Real Care Baby (RCB) simulator (Janeslätt et al., 2018). The education materials—the Parenting Toolkit ‘Children, what does that involve?’—was created for adults with intellectual disabilities by the researcher and clinician Marja Hodes from the Netherlands (ASVZ, 2022). Janeslätt et al. (2018) presented a translation into Swedish, with further adaptations made to the material after approval from the creator.

The RCB simulator was originally designed to stimulate discussion about the pros and cons of having a baby and thus contribute to informed decisions on whether to have a child and, if so, when.

Evaluations have included young people without disabilities and focused on various outcomes: overall performance, contraceptive use, preventing teenage pregnancies and attitudes about parenthood. An Australian study showed more teenage pregnancies in a general population of girls, aged 13–15 years, who had cared for the RCB simulator during a weekend compared with a control group (Brinkman et al., 2016). The low age of the girls and choosing a weekend for the intervention may have contributed to these unexpected results. However, in the study by Brinkman et al. (2016), complementary education about what parenting entails was not provided. A Cochrane review of 53 randomised controlled trials concluded that programmes with a combined educational and contraceptive component reduced unintended teenage pregnancy, underlining the importance of providing an educational component (Oringanje et al., 2016). Five studies with mainly older adolescents found that attitudes to parenthood changed after caring for an RCB simulator. The participants learned about the responsibilities, difficulties and challenges of caring for a baby (de Anda, 2006; Jang & Lin, 2016; McCowan et al., 2009; Roberts & McCowan, 2004; Wistoft & Stovgaard, 2013). de Anda (2006) reported a significant increase in the age at which students wished to have a child after caring for the RCB simulator. Jang and Lin (2016) concluded that RCB simulators could be used in family life education to help students get hands-on experience and consider the consequences of unwanted pregnancies. Studies combining the RCB simulator with education about parenting reported that attitudes toward sexuality and parenting issues could be modified (McCowan et al., 2009; Roberts & McCowan, 2004). Thus, some studies have highlighted the need to combine the RCB simulator with education about parenthood. Thus far, there is a lack of knowledge about the efficacy of providing group interventions combining the RCB simulator with education about parenthood to students with intellectual disabilities. The feasibility study done (Janeslätt et al., 2018) guided the present study.

The aim of the study was to investigate the efficacy of an intervention designed to provide a basis for informed choices about future parenthood in special upper secondary school students with intellectual disabilities.

1.1 | RESEARCH QUESTIONS

1. Are there any differences in changes in attitudes toward becoming a parent between the intervention group and the control group after the invention?
2. Can an intervention including use of a Real Care Baby simulator and education alter attitudes toward becoming a parent?

2 | METHOD

2.1 | Design

A randomised trial with a waiting list (WL) control group was used, with inclusion of students in the autumn of three consecutive years.

2.2 | Participants

In total, 108 special upper secondary school students with mild or moderate intellectual disabilities, aged 16–21 years, gave informed consent and participated. The analyses included 91 students. In order to be legally eligible to attend a special school for people with intellectual disabilities in Sweden, a thorough assessment documenting intellectual disabilities is necessary.

2.3 | Sample size

A power calculation using independent t-tests with equal variance showed that a trial of two independent groups with 59 participants in each group could identify an increase of 10% with 80% confidence at a 5% significance level. This is based on a previous study in which 236 young people aged 14–18 years filled out the pre- and post-intervention versions of the Infant Simulator Attitude Scale (ISA, formerly the Infant Simulator Impact Scale, ISIS) questionnaire (Roberts & McCowan, 2004).

2.4 | Randomisation

The randomisation was carried out late in the spring to facilitate for the participating schools to plan and organise the intervention in the following school year. It was important for the schools to know whether they belonged to the control group or the intervention group. Because of the WL design, the schools randomised to the control group needed to collect data in autumn, to be able to provide the intervention (13 weeks) in the spring. In addition, a cluster design facilitates participant recruitment and intervention monitoring. The participating special upper secondary schools were randomly allocated to the intervention group or the WL control group using a web-based list randomisation program (www.random.org/lists). The randomisation was done by two of the researchers and an independent professional, who signed the randomisation protocol each year (three occasions). In year three, one special upper secondary school dropped out of the study after being randomised to the intervention group but before recruiting any participants. The students included are presented by year in Table 1, making up a total sample of 108 participants (Table 2). Individual consent was gathered after randomisation. The teachers in each school enrolled their students. Fifty-one students were allocated to the intervention group and 56 to the WL control group, see Figure 1.

The study was not blinded. Post-intervention assessment was conducted by the researchers not involved in the intervention.

3 | INSTRUMENTS

The ISA (Roberts & McCowan, 2004) was used to measure thoughts and attitudes concerning future parenthood. The original ISA

TABLE 1 Inclusion period, N^o of schools, participants included and in analyses

Inclusion period	Intervention group		Control group	
	Included n=	In analyses n=	Included n=	In analyses n=
Autumn 2017–spring 2018 (schools n = 7)	26	20	15	8
Autumn 2018–spring 2019 (schools n = 9)	21	18	15	12
Autumn 2019–spring 2020 (schools n = 9)	9	8	35	25

TABLE 2 Characteristics in each group of participants in analyses (n = 91)

Group	Intervention group	Control group	Total
n =	46	45	91
Gender	24F/22M	26F/19M	
Age mean (SD)	18.57 (1.11)	18.27 (0.96)	

questionnaire consisted of 38 items and has been translated into Swedish and adapted to be suitable for students with intellectual disabilities, as previously described (Janeslätt et al., 2018). In this study, some statements were slightly simplified. Three descriptive items and nine items related to sexual activity and contraception were removed, as the intervention to be evaluated focused on the imaginary parenthood as a life phase and relations (topics: Time, Money, Skills, Relationship and Housing) and not from sexual behaviours or contraceptive perspectives. A couple of questions were added due to the new target group. Examples include: ‘Do you think children of parents with intellectual disabilities are as well cared for as children of other parents?’ (item 12) and ‘Do you think your family would be upset if you became pregnant?’ (item 14). Another adaptation was made regarding the response options on the 4-step Likert scale, which in the original ISA questionnaire were: (a) Strongly agree, (b) Agree, (c) Disagree, and (d) Strongly disagree. In the Swedish version for students with intellectual disabilities, the four response options were changed as follows. For items 11 and 12, the options were: (a) Yes, always, (b) Yes, mostly, (c) No, seldom, and (d) No, not at all. For items 13–21, the options were: (a) Yes, a lot, (b) Yes, a little, (c) No, and (d) No, not at all. For items 22–26, the options were: (a) Yes, absolutely, (b) Yes, (c) No, and (d) No, not at all. In this study, we have summated and labelled the four steps as: (a) Strong yes, (b) Yes, (c) No, and (d) Strong no. The response options were visually adapted, with bold font used to highlight the first and last options (Janeslätt et al., 2018). The response option ‘Don’t know’ was provided for all items (11–26). Here, item numbers refer to the Swedish adapted version. This adapted ISA questionnaire was found usable for this target population and indications of sensitivity to measure change after intervention was established (Janeslätt et al., 2018).

The ISA questionnaire, the primary outcome measure, includes questions regarding time, money, relationships and skills, all related to the Parenting Toolkit. Baseline data were collected by the teachers and later data collection was conducted by the researchers. Only the primary outcome will be presented in this article. Information about self-rated self-efficacy was collected, but is not presented here.

3.1 | Data collection

Data collection was performed during three school years. The first data collection was performed from October 2017 to May 2018, with seven schools randomised (4 intervention/3 control). The second data collection was performed from September 2018 to June 2019, with nine groups at eight schools randomised (5 intervention/4 control). The last data collection was performed from September 2019 to June 2020, with nine groups at eight schools randomised (5 intervention/4 control). The numbers of participants included in each year are presented in Table 1. Data collection was considered complete and ended in June 2020 (n = 108). The last year of data collection was affected by the COVID-19 pandemic and it was not considered realistic to extend data collection for another year to gather the 10 additional participants needed based on the power analysis.

Baseline data (t1) were collected by the trained teachers at each school, in a private room. Post-intervention data collection (t2) was done at the schools by the researchers (first, second and last authors), all of whom had experience of the target group. The students were offered any support they wanted or needed, such as having the questionnaire read aloud or getting difficult words explained.

3.2 | Differences between the intervention and control groups

The differences between the intervention and control groups were analysed at a total score level and for each item separately. First, Cohen's kappa was used to explore whether or not there were any differences between the scores at t1 and t2. Any differences between the groups were analysed in two ways: (i) By comparing the kappa scores of the groups. At a total score level, this was done by correlating the total kappa scores of the intervention group and the control group, respectively. (ii) By comparing any differences between the groups from t1 to t2 using the Mann–Whitney U test (at the total score level) and the Chi2 test (at the item level).

Analyses of the differences between the intervention and control groups were done twice. First, scores of ‘don't know’ were excluded, so only the four response options in the original ISA were included. Then, changes in responses of ‘don't know’ were analysed separately. These separate analyses were motivated by the rather large proportion of such responses (15.5%).

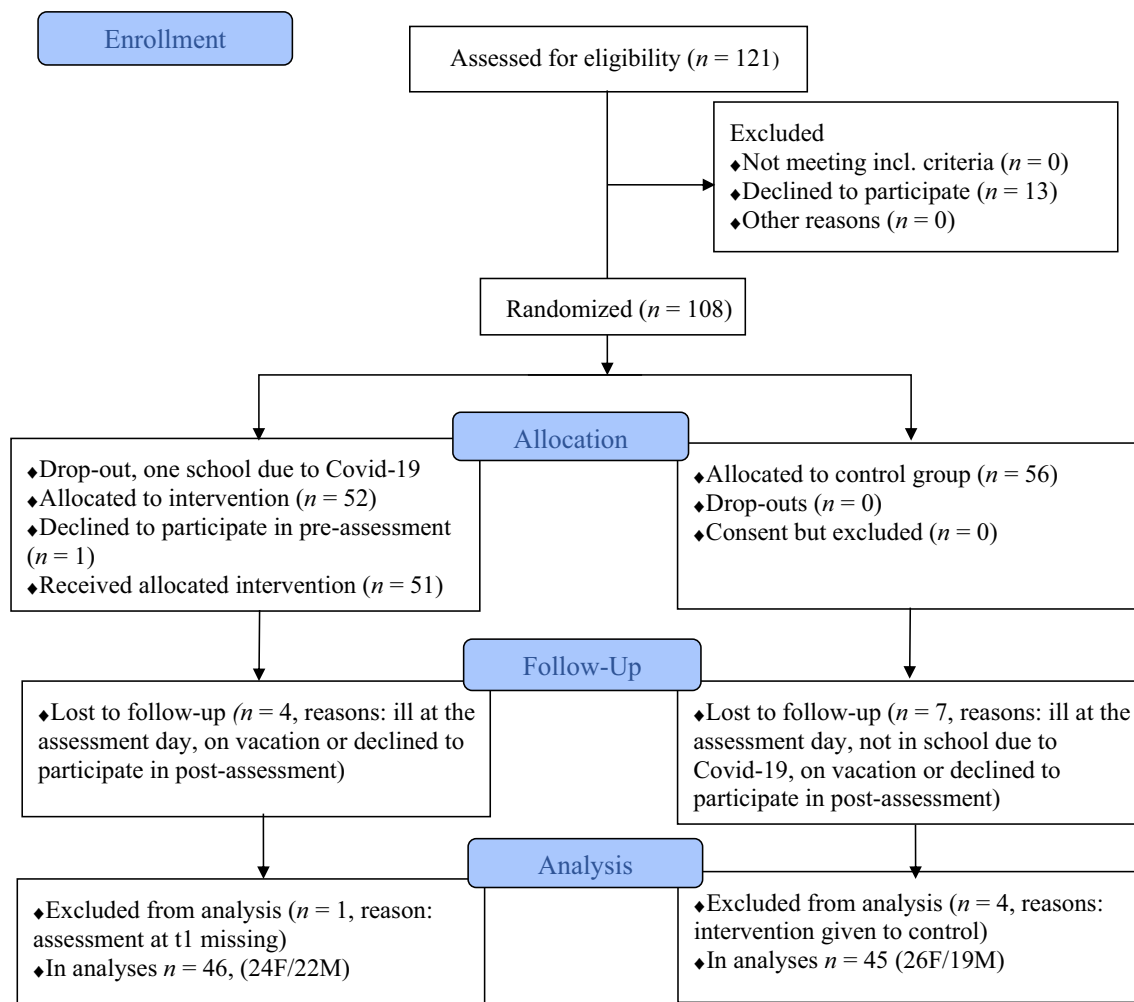


FIGURE 1 CONSORT 2010 flow diagram

3.3 | Process

The headmasters of 11 upper secondary schools approved the study and data collection was performed from autumn 2017 to spring 2020. In the first data collection, seven special upper secondary schools were invited to participate. In the second data collection, eight special upper secondary schools were invited to participate. The third data collection included four special upper secondary schools. All students with mild intellectual disabilities aged 16–21 years in target classes were informed about the study and those who were interested in participating received additional written and verbal information about the study from their teacher. The recruitment was done by the teachers, who enrolled the participants. The recruitment of students was done during the autumn semester of the school year. The study was also presented to the students' parents at a school meeting, which gave them the possibility to ask any questions about the study. Out of 121 eligible students, 108 participants gave written consent. Each student's parents signed a written consent form. This was considered important since part of the intervention, taking care of the RCB simulator, took place at home.

Before the intervention, training for the teachers and 1–3 school staff members per school, was during 1 day. The training included current research on youths with intellectual disabilities regarding reproduction and parenting and how the material used had been evaluated in the past. Lessons on the Parenting Toolkit 'Children, what does that involve?' (ASVZ, 2022) and the adaptations made for it to be more suitable in a special upper secondary school. Lessons on the RCB simulator included a workshop about programming and experiences from a special teacher regarding use of RCB simulators in special upper secondary schools. A lesson about the research project, randomisation and data collection rounded out the day. Method support was offered to the teachers and school staff in regular network meetings once or twice per semester and by phone or online meetings when needed to monitor the intervention given.

3.4 | Intervention

The intervention included a combination of 13 weekly theoretical lessons and a 3-day practical caring session with a RCB simulator. The

TABLE 3 Characteristics of the study population of intervention group ($n = 56$) and control group ($n = 52$)

	Intervention n %		Control n %		Total (n) = 108
Gender^a					
Male	25	44.6	24	46.2	49
Female	31	55.4	28	53.8	59
Age					
16	1	1.8	3	5.8	4
17	7	12.5	7	13.5	14
18	15	26.8	21	40.4	36
19	21	37.5	18	34.6	39
20	8	14.3	3	5.8	12
21	2	3.6	0	0	2
Family situation of the parents					
Married/cohabiting parents	20	36.7	21	40.4	41
Divorced parents	25	44.6	26	50.0	51
Parents not alive	5	9	2	3.8	7
Another situation	4	7.1	3	5.8	7
Having a disability					
Yes	41	73.2	46	88.5	87
No	7	12.5	4	7.7	11
Education level of mother					
University/college	5	8.9	7	13.5	12
Upper secondary school	19	33.9	21	40.4	40
Primary school	8	14.3	3	5.8	11
Do not know	21	37.5	20	38.5	41
Education level of father					
University/college	6	10.7	5	9.6	11
Upper secondary school	20	35.7	15	28.8	35
Primary school	4	7.1	6	11.5	10
Do not know	22	39.3	26	50.0	48
Number of siblings					
1	3	5.4	3	5.8	6
2	10	17.9	19	36.5	29
3	12	21.4	12	23.1	24
4	14	25	6	11.5	20
5 or more	15	26.7	12	23.1	27

^aMissing data on two participants concerning all items except gender.

theoretical lessons (each 1.5 h) were recommended to be held at school once a week, using the Parenting Toolkit 'Children, what does that involve?' (ASVZ, 2022). The practical care encompassed 3 days and nights of caring for the RCB simulator at home during the ongoing intervention.

Teachers or healthcare personnel at the schools held lessons with the students. At the first lesson, the topic was introduced by discussions based on cards entitled 'What I wish, from the Parenting Toolkit. These included questions about what a person wants in their adult life, including working life and parenting, serving to trigger and stimulate peer interactions. From lesson two and on, the lessons focused

on five topics: Time, Money, Skills, Relationship and Housing. The lessons demonstrated the differences between being single and having a child. When discussing the topic Skills, information about child development and needs at different ages was included.

The caring part included introducing how to care for the RCB simulator in parallel with the first five lessons. The education in caring was supported by a handbook with pictures. This handbook, with easy-read text, depicted hands-on situations associated with the care of RCB simulator, for example, rocking, changing a diaper and bottle-feeding. From lesson six, the students took it in turns to take the RCB simulator home during three weekdays and nights. The students were

TABLE 4 Descriptive data of the overall rating on the ISA scale.

	Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18	Item 19	Item 20	Item 21	Item 22	Item 23	Item 24	Item 25	Item 26	Sum	
Intervention group	(a) Strong yes	5	8	16	14	28	7	27	42	44	23	41	1	8	3	9	7	283
	(b) Yes	16	13	6	12	8	19	17	7	4	18	5	8	15	10	16	7	181
	(c) No	11	5	5	7	8	6	3	1	1	4	3	19	7	20	7	10	117
	(d) Strong no	7	1	14	9	4	5	1	0	0	3	1	10	4	9	1	5	74
	Don't know	10	23	7	8	3	11	3	0	1	2	0	10	14	6	17	21	136
	(a) Strong yes	2	10	14	16	27	4	30	39	39	22	38	4	3	0	7	10	265
	(b) Yes	17	18	9	8	12	23	10	4	4	16	4	6	10	9	17	18	185
	(c) No	10	4	9	6	2	11	2	0	0	2	1	14	15	19	5	2	102
	(d) Strong no	3	4	8	9	1	3	0	0	0	0	0	16	2	9	0	1	56
	Don't know	9	6	2	4	1	3	1	0	0	2	0	4	12	5	12	10	71
	(a) Strong yes	3	11	19	30	35	7	37	52	55	30	48	1	14	6	12	3	363
	(b) Yes	15	19	14	10	18	17	14	4	0	17	4	4	10	9	20	12	187
(c) No	15	12	5	4	2	16	3	0	0	6	2	23	16	16	7	12	139	
(d) Strong no	12	4	9	4	0	8	1	0	0	1	0	19	5	18	5	9	95	
Don't know	11	10	7	5	1	8	1	0	1	2	2	9	11	7	12	20	107	
(a) Strong yes	3	9	17	21	31	3	28	41	43	18	37	0	6	3	6	9	275	
(b) Yes	10	17	9	16	11	15	13	4	3	20	6	6	8	9	20	19	186	
(c) No	21	8	1	1	2	15	1	0	0	3	1	13	14	13	3	1	97	
(d) Strong no	4	2	8	3	0	9	0	0	0	0	1	15	6	13	2	4	67	
Don't know	5	7	8	5	2	4	4	1	0	5	0	12	12	8	15	13	101	

TABLE 5 Cohens Kappa scores (stability between t1 and t2).

Item and item content	Intervention						Control					
	Weight.	Asympt. Std. Error	z	Sig.	95% Asympt. CI Lower Bound	Upper Bound	Weight. kappa	Asympt. Std. Error	z	Sig.	95% Asympt. CI Lower Bound	Upper Bound
11. Children as well cared for by teenage parents	0.01	0.10	0.13	0.90	-0.18	0.20	0.09	0.09	1.11	0.27	-0.08	0.26
12. Children as well cared for by parents with ID	0.16	0.10	1.64	0.10	-0.04	0.36	0.32	0.09	3.84	0.00	0.13	0.50
13. I would be upset if I became pregnant	0.22	0.10	2.39	0.02	0.03	0.42	0.19	0.09	2.19	0.03	0.01	0.37
14. Family would be upset if I became pregnant	0.22	0.10	2.38	0.02	0.02	0.42	0.44	0.09	4.69	0.00	0.26	0.62
15. Important to have/live with a partner if parent	0.11	0.10	1.12	0.27	-0.09	0.30	0.15	0.10	2.01	0.05	-0.05	0.35
16. A child affects a relationship negatively	-0.04	0.09	-0.45	0.65	-0.21	0.13	0.18	0.10	2.30	0.02	-0.01	0.36
17. Parenting takes time to learn	0.24	0.11	2.63	0.01	0.03	0.45	0.19	0.09	2.64	0.01	0.02	0.36
18. Parenting requires patience	-0.03	0.07	-0.37	0.71	-0.18	0.11	0.15	0.11	2.22	0.03	-0.06	0.36
19. Taking care of a child is a large responsibility	0.16	0.12	1.69	0.09	-0.08	0.40	0.15	0.11	2.10	0.04	-0.07	0.37
20. Parenting should be discussed in school	0.06	0.08	0.73	0.47	-0.09	0.21	0.25	0.09	3.44	0.00	0.07	0.42
21. Taking care of a child costs money	0.00	0.09	0.04	0.97	-0.16	0.17	0.15	0.10	1.89	0.06	-0.05	0.35
22. I could afford to have a child	0.13	0.09	1.57	0.12	-0.04	0.30	0.16	0.09	2.13	0.03	-0.01	0.32
23. I would feel better if I had a child	-0.06	0.08	-0.66	0.51	-0.22	0.10	0.26	0.09	3.34	0.00	0.09	0.43
24. I could raise a child and still finish school	0.03	0.08	0.35	0.72	-0.13	0.19	0.18	0.08	2.40	0.02	0.02	0.33
25. My future would be better with a child	0.26	0.11	2.55	0.01	0.05	0.47	0.29	0.09	3.34	0.00	0.11	0.47
26. Being parent makes me more important with friends	0.23	0.09	2.48	0.01	0.06	0.40	0.25	0.08	2.89	0.00	0.09	0.42
Mean	0.11						0.21					

TABLE 6 Comparing change from t1 and t2 between intervention and control

	'Positive change' on four grade Likert scale		From do not know to know	
	Chi-2	Sig	Chi-2	Sig
Item 11	0.3	0.60	0.0	0.96
Item 12	2.5	0.12	10.6	0.01**
Item 13	4.2	0.04**	0.1	0.84
Item 14	1.2	0.27	2.7	0.10
Item 15	0.1	0.76	3.5	0.06*
Item 16	0.1	0.80	3.8	0.05*
Item 17	1.1	0.29	0.5	0.49
Item 18	2.7	0.10	1.1	0.29
Item 19	3.5	0.06*	0.1	0.94
Item 20	2.5	0.12	3.5	0.06*
Item 21	3.7	0.06*	0.2	0.63
Item 22	0.3	0.59	3.2	0.07*
Item 23	1.7	0.19	3.8	0.05*
Item 24	0.24	0.62	0.9	0.37
Item 25	1.1	0.31	4.8	0.03**
Item 26	0.1	0.90	0.1	0.80

**Significant.

*Close to significant.

in school in the daytime, during which time the RCB simulator was programmed for 'babysitting'. After school, all night and in the morning, the students cared for the simulator. The RCB simulator has the weight and size as a three-month-old baby and can have different ethnic appearances. It signals basic needs, such as hunger, burping, changing of diaper or comforting. It can be programmed at three different levels of needs, easy, medium and hard, based on recordings from real infants. In this study, the level 'Mixed hard' was used, meaning that a randomisation of the recordings from five infants included in the category hard is used. The level of care is registered and after 3 days, a report is generated with data on how well the carer has responded to the needs of the simulator.

3.5 | Fidelity

All teachers and school staff were provided training and method support in regular meetings for a full day 1–3 times per year, for exchange of experiences and methodological support, to ensure programme consistency and study fidelity.

3.6 | Data analyses

Descriptive data were explored based on the frequencies of each rating ('Strong yes', 'Yes', 'No', 'Strong no', 'Don't know' and missing data), for each item on the ISA (items 11–26).

Possible differences between the intervention and control groups in ratings at t1 and t2 were explored by calculating Cohen's kappa item by item. These scores were compared using the independent

samples Mann–Whitney *U* test. Since this analysis indicated a difference between the groups, further calculations were performed to explore whether or not the differences were statistically significant ($p < .05$). The independent samples Mann–Whitney *U* test was used to explore the differences at the total score level and the Chi2 test was used to explore the differences at the item level.

No further sub-group analyses were done. The statistical analyses were performed using IBM SPSS statistics 26.

3.7 | Ethical considerations

The study was approved by the Regional Ethical Committee (Dnr: 2016/16) for participants aged 18–21 years. The study received a supplemental approval in November 2017 (Dnr: 2016/01) and the eligibility criterion was changed to 16–21 years (Dnr 2016/16/1).

The four principals of ethics were taken into account throughout the whole study—the beneficence, non-maleficence, autonomy and justice. No important harms or unintended effects were found among the participants. The study was registered in ClinicalTrials.gov (number NCT03348124).

4 | RESULTS

4.1 | Descriptive data

The mean age of the intervention group was 18.63 years (range 16–21 years) and that of the control group was 18.21 years (range 16–21 years) (Table 3).

The ratings for item 11–26 of the Infant Simulator Attitude Scale (ISA) are presented in Table 4. The ratings are presented for all four steps on the Likert scale ('Strong yes', 'Yes', 'No' and 'Strong no') and 'Don't know', at t1 and t2 for the groups, separately.

Weighted kappa scores (total and item by item) are presented in Table 5. These results show that the values from t1 to t2 were more stable in the control group (mean kappa = 0.21), that is, the changes were larger in the intervention group (mean kappa = 0.11). The independent samples Mann–Whitney *U* test showed that the difference in kappa scores was significant (exact sig. two-sided test 0.02), indicating that the groups differed, but not in what way.

When comparing the groups regarding positive changes between t1 and t2 in items 11–26 together (i.e., better ratings at t2 than at t1), using the independent samples Mann–Whitney *U* test, the result was nearly significant for the four-step Likert scale ($U = 457$, $p = .06$). Further, the change from 'do not know' at t1 to 'know' at t2 was significant ($U = 672$, $p = .01$). When comparing the groups regarding changing from 'know' to 'don't know', the result was not significant ($U = 1696$ and $p = .12$). This indicates that the change from 'don't know' was the most significant change from the intervention.

Item by item analyses (items 11–26), using the Chi2 tests to compare the intervention and control groups regarding positive changes between t1 and t2, are shown in Table 6. A 'positive change' is a change toward a 'strong yes', for example from 'no' to 'yes' or from 'strong no' to 'no'. The first column shows 'better ratings' at t2 on the four-step Likert scale and the second column shows changes from 'don't know' at t1 to 'know' at t2. These results indicate that when analysing ratings only on the four-step Likert scale, changes for one item (13) were significant ($p = .04$) and those for two more items (19 and 21) were nearly significant (both $p = .06$). When including changes from 'don't know' to 'know', the results indicate significant changes ($p = .01$ and $p = .03$) for two items (12 and 25) and nearly significant changes ($p = .06$, $p = .05$, $p = .06$, $p = .07$ and $p = .05$) for five more items (15, 16, 20, 22 and 23).

Thus, items 12, 13 and 25 showed statistically significant changes and items 15, 16, 20, 22 and 23 showed positive tendencies in that the participants in the intervention group changed from uncertainty to certainty. For item 12, 'Do you think that children of parents with intellectual disabilities get as good care as children of other parents', significantly fewer participants in the intervention group rated 'don't know' post-intervention. Thus, the change from 'don't know' to 'know' was larger in the intervention group than in the control group, and many in the intervention group believed that children of parents with intellectual disabilities get similar care as children of other parents. For item 13, 'Would you be upset if you found out you/your girlfriend were pregnant', significantly more participants in intervention group responded that they would be upset. For item 25, 'Would your future be better if you had a child', significantly fewer participants in the intervention group rated 'don't know' post-intervention. The change from 'don't know' to 'know' was larger in the intervention group here too, with many participants becoming more positive toward becoming a parent. For two items, there was a tendency toward a measurable difference between the intervention and control

groups: item 19 'it is a big responsibility, taking care of a child' and item 21 'taking care of children costs money'. These changes were at least one step up on the rating scale.

5 | DISCUSSION

The comparison of the overall ratings on the ISA (items 11–26) at t1 and t2 revealed that the change was greater in the intervention group than in the control group. Further, there was a significant difference in the change from 'don't know' at t1 to 'know' at t2 ($U = 672$, $p = .01$), with greater stability in the control group. In further analysis using the Mann–Whitney *U* test, the character of the change between t1 and t2 was investigated. When comparing the groups regarding positive change on the four-step Likert scale used in the original ISA, the result was nearly significant ($U = 457$, $p = .06$). Taken together, these results are the first indication of the efficacy of intervention in influencing the attitudes of the students with ID. This is in line with the findings in previous qualitative studies showing that the intervention can provide knowledge and give new insights about future parenting (Janeslätt et al., 2018; Randell et al., 2020). Furthermore, the present study adds early evidence that the intervention, when provided to special upper secondary school students with intellectual disabilities, could facilitate informed choices and decisions concerning future parenting.

Previous studies highlight that typically developing older adolescents can benefit from education on parenting (Oringanje et al., 2016) and caring for RCB simulators (de Anda, 2006; Jang & Lin, 2016; Roberts & McCowan, 2004; McCowan et al., 2009; Wistoft & Stovgaard, 2013). The present study shows that students with intellectual disabilities can also gain certainty from group interventions providing a combination of practical caring for RCB simulators and educational material adapted to their cognitive functions. The student interviews highlighted how caring for the RCB simulator could give experiences that made the knowledge provided in the Parenting Toolkit material tangible, as both practical and theoretical knowledge together were necessary (Randell et al., 2020).

The present study found three significant values at the item level. First, participants in the intervention group responded, after the intervention, that they would be less upset if they/their partner became pregnant (item 13). This is very interesting, as previous studies have shown that teenagers with intellectual disabilities are more likely than other teenagers to have children (Höglund et al., 2012a; Höglund et al., 2012b). However, the overall results showed that the intervention contributed to altered attitudes, possibly by giving insights about what parenting entails. The students wanted to avoid or postpone pregnancy because they became more aware of the amount of effort connected to having a child. Similar results have been reported in some previous studies: a significant increase in awareness and knowledge about the needs of a child, leading to a conscious decision to postpone or avoid pregnancy after taking care of an RCB simulator (de Anda, 2006; Randell et al., 2020). If the intervention can contribute to postpone pregnancies until after the teenage years, it may be

protective and lower some parenthood-related risks (Wahn & Nissen, 2008).

Second, significantly fewer participants in the intervention group rated 'do not know' at t2, which probably means that they had increased their levels of knowledge and could make informed choices. Several items had changes that were nearly significant, strengthening the evidence that discussing the themes in the Parenting Toolkit material did increase knowledge: the importance of living with a partner when having a child (item 15), if parenting should be discussed in school (item 20) and if they could afford having a child (item 22). After the intervention, the students had significantly more positive attitudes to the statement that children of parents with intellectual disabilities get similar upbringings as children of other parents (item 12). They also had more positive attitudes to the statement 'My future would be better with a child' (item 25). Possibly, the participants felt more confident in that they knew what parenthood entailed after the intervention. Not only did they better understand what children needed, but also what things need to be in place before becoming a parent.

Third, a tendency was found that the participants moved from extreme to less extreme values (e.g., from 'strong yes' to 'yes'). This may be thanks to the way in which the Parenting Toolkit was presented: non-judgementally, as recommended by Potvin et al. (2019), and adapted to the target group, as described by Azar et al. (2013). This was the intention when the Parenting Toolkit was first created. Furthermore, the intervention provided real experiences, as recommended by Feldman (1994) and Feldman et al. (1999), through the use of the RCB simulator. The more nuanced post-intervention responses indicate that the intervention not only contributed to increased knowledge, but also gave insights into the complexity of becoming and being a parent. This is in line with what was found in past student interviews evaluating the same intervention (Randell et al., 2020).

Fourth, significantly fewer participants in the intervention group rated 'do not know' after the intervention. This suggests an increase in knowledge about what parenthood entails, which was also found by Randell et al. (2020). The target group has a human right to get more knowledge about parenthood (Convention on the Rights of Persons with Disabilities, 2007). The results of this study show that an intervention combining education using the Parenting Toolkit and the RCB simulator can provide a basis for informed choices about future parenthood among students with intellectual disabilities.

6 | METHODOLOGICAL DISCUSSION

A cluster randomisation design was chosen at first, but some secondary upper schools had too few students participating for a cluster analysis to proceed.

Though the groups were randomly allocated, it cannot be ruled out that students interested in parenting were overrepresented in this study. The teachers in each school recruited students. In some schools, a full class would participate, but in larger schools, specific groups of interested students were created. Still, the aim was to

evaluate the efficacy of the intervention in the outcome of changes in attitudes and the participating groups allocated to the intervention and control groups contained similar numbers from small and large schools.

7 | STRENGTHS AND LIMITATIONS

One strength was that three of the authors (BH, GJ, and ER) collaborated to collect the data, and all authors were responsible for analysing and interpreting the results and writing the manuscript, to ensure the reliability of the study. Another strength in this study was that the intervention seemed to provide enough knowledge for students to make more informed choices and decisions regarding future parenthood. Similar results were recently presented in a Swedish interview study evaluating the same intervention (Randell et al., 2020). Despite the strength of this study, a tentative conclusion of the results is necessary.

However, there were several limitations. First of all, blinding of the participants was not possible, as the intervention was known to them, which is a weakness. Yet the post-intervention data collection was made by researchers, not involved in the intervention. The original ISA has certain limitations as an outcome measure. In this study some items were excluded. Items about sexuality and contraception were excluded of several reasons, reducing the time spent for the students being one, but also that the intervention to be evaluated focused on providing a base for informed choices about parenthood as a life phase and relations and not at all from sexual behaviours or contraceptive perspectives. The exclusion of items from ISA limits the possibility to compare the results with previous findings from general population. Also, the adaptation of the ISA items used were necessary, but not fully adapted to the target group nor individually to each participant. The researchers added the 'Don't know' option, as it was assumed the target group would need it. The findings suggest that this was indeed the case. The response options were also visually adapted to the target group. Still, it is a challenge to measure attitudes and values as what is best and valued positively by one student may not be best for other students, which may have affected the validity and reliability of the study. Thus, few significant values were found. The target group with intellectual disabilities often have difficulties comprehending abstract information and the intervention made such information more tangible. There were balancing aspects in the study, such as the adapted questionnaire, the questions being read aloud and clarified when needed, using pictures, and the support from teachers.

8 | CLINICAL IMPLICATIONS

The intervention is well-suited for students, aged 16–21 years, with intellectual disabilities, when conducted at special upper secondary schools. The group intervention format is an effective way to provide a basis for informed choices to students facing adulthood. It may also

be suitable at habitation and family centres and in voluntary organisations. However, it takes several weeks and encompasses both theoretical and practical knowledge. The intervention was extended from 8 weeks in the pilot study (Janeslätt et al., 2018) to 13 weeks in the present study. The length and contents must be adapted to each group, for the best outcome possible, meaning that some groups may need more than 13 weeks.

9 | CONCLUSIONS

The study provides early evidence of efficacy, indicating that students with intellectual disabilities participating in a group intervention can increase their knowledge about future parenting. The increased knowledge and new insights can provide more confidence in crucial choices about adulthood and becoming a parent. The results also presented evidence that a group intervention including the Parenting Toolkit 'Children—what does that involve?' and the RCB simulator can support informed choices and decisions about future parenthood. The method may be useful in other target groups in need of adapted knowledge about parenthood. More research is needed to evaluate the effects of the method in other age groups.

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

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