



香港公開大學
THE OPEN UNIVERSITY
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Evaluation of the Effectiveness of the Wholistic Care Model of Residential Service for Children and Adolescents

**Research Report
November 2020**

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The work described in this report was fully supported by The Open University of Hong Kong Research Grant (No. 2017/1.2) and (No. 2018/1.1).

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EXECUTIVE SUMMARY

Children and adolescents in residential children and youth homes are more vulnerable and prone to various health risks. Several studies have reported that these residents tend to suffer from various types of health problems, such as untreated physical and mental health problems.

The Right Care Right Time (2Rs) project was the first wholistic health care project to focus on early identification and early treatment for the child and young adult residents (the residents) living in three residential children and youth homes in Hong Kong. This project incorporated close collaboration between multidisciplinary professionals and provided continuous individualised care in residential services, which aimed to improve the health outcomes of residents, reduce medical costs, and lessen the overall burden to society.

This study was conducted from December 2017 to January 2020. The residents and their caregivers taking part in the 2Rs project were asked to complete questionnaires before the first consultation, then every three months, including the third and sixth month after the last consultation. Self-administered questionnaires that were used include the age-specific Paediatric Quality of Life Inventory Version 4.0 Generic Score Scale (PedsQL 4.0), the Children Behaviour Checklist (CBCL), the Adult Self Report (ASR), and the Adult Behavioural Checklist (ABCL). Data was analysed using the ASEBA-PC modules and Statistical Package for Social Sciences (SPSS) Version 23.0.

119 residents were recruited in this study, with ages ranging from 6 to 22 years old. Most of these recruited residents (94.4%) were female. The reasons given for referral included psychosocial issues (21.3%), sleep problems (15.7%), acne and other skin problems (14.9%), and other health problems (48.1%). Gradual improvements were noted throughout the first 12 months of participation in the 2Rs Project. Both participants and caregivers reported a significant increase in physical functioning from baseline to the post-programme stage. For problem behaviours, thought problems were significantly decreased from baseline to the post-programme stage. This study shows the 2Rs project is effective at improving the health-related quality of life of residents and addressing their behavioural problems.

Based on the results of this study, we recommend incorporating the service of 2Rs projects to all residential children and youth homes in Hong Kong. As a high prevalence of psychosocial

health issues were identified in this study, we suggest it could enhance the early identification and intervention of psychosocial health issues. To improve future wholistic care projects, we also recommend introducing lifestyle modification programmes and nurses into residential children and youth homes.

The research team believes that this study could bring better health services to children and adolescents in residential homes.

摘要

院護兒童及青少年是脆弱的一群，並承受著多項健康風險。各種研究發現院護兒童及青少年容易患上多項健康問題，例如未經治療的健康狀況及精神健康問題等。Right Care Right Time (2Rs) 計劃是香港第一個專為院護兒童及青少年提供及時評估和適切治療的全人院護服務計劃。此計劃透過跨專科的合作和其及時的介入，向院護兒童提供了持續的個人化照顧，以改善院護兒童及青少年的健康和減低往後出現長期疾病及過早死亡的機會。從長遠看，全人的院護服務可以減低醫療成本及社會的負擔。

本研究於 2017 年 12 月至 2020 年 1 月期間進行於三間院護機構— 分別為寶血兒童村、播道兒童之家，和善牧會。院護兒童及青少年及其照顧者在接受 2Rs 計劃第一次診症前，每三個月至離開計劃時，離開計劃後第三個月及第六個月填寫問卷。這些自填式問卷包括根據不同年齡設計的兒科學生活質素調查 4.0 版本 (PedsQL 4.0)、兒童及青少年行為調查問卷 (CBCL)、成人自陳量表 (ASR) 及成人行為調查問卷 (ABCL)。數據會以 ASEBA-PC 模式及統計產品與服務解決方案 (SPSS) 版本 23.0 進行分析。

119 名年齡介乎 6 歲至 22 歲的院護兒童及青少年參與本研究。大部份參與者屬女性 (94.4%)。主要被轉介的原因包括心理社會問題 (21.3%)、睡眠問題(15.7%)、暗瘡及其他皮膚問題 (14.9%) 及其他健康問題 (48.1%)。參與 2Rs 計劃的 12 個月中，參與者在生活質素和行為問題各方面都漸漸的出現改善。參與者及其照顧者表示參與者生理活動方面在參與 2Rs 計劃前後有明顯的提升。在行為問題方面，他們的思維問題在參與 2Rs 計劃前後也有顯著的減少。本研究顯示了 2Rs 計劃有效於改善院護兒童及青少年的生活質素和行為問題。

就本研究的結果，我們建議將 2Rs 計劃的服務納入院護服務內，並把 2Rs 計劃推廣於全香港的兒童及青少年院護機構。由於研究當中發現到院護兒童及青少年的心理社會健康問題普遍，我們認為需要加強對所有院護兒童及青少年進行心理社會健康問題檢查，並及早治療。為改善將來的全人院護服務計劃，我們建議引入生活型態改變方案，並加設註冊護士於計劃中。研究團隊相信本研究可以為院護兒童及青少年整體健康帶來更好的健康服務。

LIST OF ABBREVIATIONS

2Rs	Right Care Right Time
ABCL	Adult Behaviour Checklist
ASR	Adult Self Report
CBCL	Child Behaviour Checklist
HQoL	Health-related quality of life
PedsQL 4.0	Paediatric Quality of Life Inventory Version 4.0
RM-ANOVA	Repeated Measures Analysis of Variance
SPSS	Statistical Package for Social Sciences

BACKGROUND

Certain children and adolescents have to be raised by residential services due to orphaning, abandonment, abuse in their families of origin, disabilities, and mental illness. Approximately 2.7 million children are under residential care worldwide (Petrowski, Cappa & Gross, 2017). In Hong Kong, the number of children under residential care has increased by 2.63% annually since 2017 (Social Welfare Department, 2019).

These children and adolescents lack family support. Studies have found that children separated from family environments are likely to present various health issues such as developmental delays, hormonal changes, abnormal cognitive functionality, decreased social-psychological health, trouble with social skills, and difficulty with emotional adaptation (Berens & Nelson, 2015; Van IJzendoorn et al., 2011). A residential experience in childhood can also be the cause of long-term effects on the development of memory and executive functioning (Wade, Fox, Zeanah & Nelson, 2019) which may result in negative outcomes in physical and mental health (Zlateva & Zdravkova, 2013). Children who stayed longer under residential care had a higher chance of speech reticence and decreased social engagement (Almas et al., 2015). Zeanah (2009) indicated that children under residential care even had a higher prevalence rate of psychiatric disorders. These abnormalities could be related to the monotonous environment, non-individualised care, unstable staffing patterns, and inadequate caregiver and child interactions present in residential homes (Van IJzendoorn et al., 2011; Zlateva & Zdravkova, 2013). Hence, early identification and early intervention is crucial in preventing negative impacts on health, and a greater promotion of health for children is needed (Campbell, 2014; Henderson & Maughan, 2001; Scott, Knapp; Simon et al., 2001; Suzuki & Tomoda, 2015).

The United Nations (2010) has introduced guidelines for the alternative care of children in which it is outlined that the wholistic care should be structured within alternative care and should be based on comprehensive assessments, planning and reviews by qualified professionals following a multidisciplinary approach. The United Nations also advocates for the application of individualised care throughout various childhood stages to meet the needs of deprived children, parents, and legal guardians (United Nations, 2010). However, there has been a lack of wholistic care for children and adolescents in Hong Kong's residential services. In view of this need, it is crucial to implement early intervention programmes

through close collaboration between multidisciplinary professionals for deprived children, which will be beneficial in achieving positive outcomes for residents (Cantwell, Davidson, Elsley, Milligan & Quinn, 2012; Simsek, Erol, Öztop & Münir, 2007).

The 2Rs project is the first project of its type in Hong Kong, adopting recommendations from international guidelines and research studies. The project is characterised by a wholistic care model – providing the early identification and assessment of residents’ health problems, and offering timely treatments and referrals. Professionals across various disciplines, including family physicians, psychiatrists, specialists, allied healthcare professionals, psychologists, and social workers, provided a series of medical services regarding residents’ physical, mental, and psychological health needs. Within the project, children and adolescents under residential care have access to continuous individualised care at the right time.

The need of institutionalised children for medical support is very great. The 2Rs project is believed to improve outcomes for institutionalised children and adolescents through a wholistic care model. The aim of this study was to examine the effectiveness of the 2Rs project.

AIM

To evaluate the effectiveness of the wholistic Care Model for Residential Services on deprived children and adolescents.

OBJECTIVES

1. To assess the health-related quality of life (HQoL) – namely physical functioning, social functioning, emotional functioning, and studies/work functioning for all 2Rs project participants before, during, and after the 2Rs project.
2. To assess the positive behaviours, academic functioning, social competence, and problem behaviours of those 2Rs project participants who were under the age of 18 before, during, and after the 2Rs project.
3. To assess the adaptive functioning and problem behaviours of the 2Rs project participants who were at the age of 18 or above before, during, and after the 2Rs project.

METHODS

This study adopted the multiple point prospective panel design. Surveys were conducted at multiple time points to track the effect of the wholistic Care Model for Residential Services on deprived children and adolescents. Participants and their primary caregivers were recruited through referrals by the three participating residential children and youth homes. They were asked to complete designated questionnaires at various points of time including:

1. Before the first consultation of the 2Rs project
2. Every three months during their care under the 2Rs project
3. On completion of the 2Rs project /termination of the residential service
4. On the third month after completion of the 2Rs project
5. On the sixth month after completion of the 2Rs project

Four questionnaires were used according to the age groups of the participants.

1. The Paediatric Quality of Life Inventory (PedsQL 4.0) was used to measure the perceived health-related quality of the resident. The health-related quality of life was classified into four aspects, namely physical functioning, emotional functioning, social functioning, and school functioning. The participants and their caregivers were asked to provide a rating for the above four aspects. The higher the PedsQL 4.0 score, the higher the level of health-related quality of life.
2. The Child Behaviour Checklist (CBCL) was used to assess behavioural and emotional problems and competencies (Achenbach & Ruffle, 2000). It consisted of eight subscales, namely anxious-depressed problems, withdrawn-depressed problems, somatic problems, social problems, thought problems, attention problems, rule breaking behaviour, and aggressive behaviour. Caregivers were asked to rate participants on these eight aspects. The normal range for any of these subscales is below a rating of 65 (Achenbach, Krukowski, Dumenci, & Ivanova, 2005). Subscale scores ranging between 65 and 69 falls into the borderline range, meaning that further investigation and close monitoring is suggested. For scores higher than 69, the level of problems is considered as within clinical range. It represents that the behavioural problem in question is severe enough to be considered a clinical concern.
3. The Adult Behaviour Checklist (ABCL) was adopted to measure behavioural problems for participants over 18 years old (n = 6). It is intended to measure the same eight

subscales as measured by CBCL. Its borderline range and clinical range cut-off points are also the same as CBCL (Achenbach et al., 2005).

4. The Adult Self Report (ASR) was adopted to measure the adaptive function of adults in four aspects. These four aspects included relationships with family, friendships, occupational functioning, and personal strengths. It adopts the same cut-off points as CBCL and ABCL (Achenbach, Krukowski, Dumenci, & Ivanova, 2005).

The use of these questionnaires was as follows:

1. Participants who were under 18 years old
 - An age-specific PedsQL 4.0 was used to measure the health-related quality of life (Varni, Seid, & Kurtin, 2001).
2. Participants who were over 18 years old
 - An age-specific PedsQL 4.0 was used to measure the health-related quality of life (James W Varni et al., 2001).
 - An ASR was used to assess adaptive function (Achenbach, Krukowski, Dumenci, & Ivanova, 2005).
3. Primary caregiver of the participants
 - An age-specific PedsQL was used to measure the health-related quality of life from the caregivers' perspective (Varni et al., 2001).
 - A CBCL from ages 6 – 18 was used to assess behavioural and emotional problems and competencies (Achenbach & Ruffle, 2000).
 - An ABCL for respondents who were over 18 years old was used to assess adaptive function from the caregivers' perspective (Achenbach et al., 2005).

The effectiveness of the 2Rs project was evaluated by measuring two aspects – health-related quality of life and behavioural problems. The health-related quality of life was measured by four variables including physical functioning, emotional functioning, social functioning, and school functioning; the behavioural problems were measured by eight variables including anxious-depressed problems, withdrawn-depressed problems, somatic problems, social problems, thought problems, attention problems, rule breaking behaviour, and aggressive behaviour.

This study was reviewed and approved by the Research Ethics Committee of The Open University of Hong Kong. All participants were fully informed about the purpose, method,

possible use of the research, and the potential risks of the research. All participants had the right to refuse to participate or to withdraw from the study at any point of the study. They were free from coercion regardless of whatever reason was given for refusing to participate or to withdraw from the study. For the participants aged between 5-17 years old, consent from their guardians was obtained. Confidentiality and privacy were ensured by limited access to both the personal data and identities of the respondents.

Statistical analysis was performed using ASEBA-PC modules and the Statistical Package for Social Sciences (SPSS) Version 23.0. Participants' demographic characteristics and the number of follow up interviews were measured in terms of frequency and percentage. Descriptive statistics, including mean, standard deviation, and range, were used to summarise the data. The Repeated Measures Analysis of Variance (RM-ANOVA) was used to compare the difference between data collected at various points of time.

RESULTS

Characteristics of Participants

Eligible participants were referred by the three residential institutions when they first joined the 2Rs project, with 119 participants recruited. Data was collected from December 2017 to January 2020 and the overall response rate was 72%. The attrition rate of participants was related to disappearances and sudden discharges from the participating institutions. The majority of participants were female and adolescent. More than half of the participants suffered from at least one health problem when they joined the 2Rs project. Participants joined the 2Rs project for a number of physical and psychosocial health reasons. The characteristics of participants are shown in table 1.

Table 1 Characteristics of Participants (n = 119)

	Frequency (%)	Mean (SD)	Range
Age (years)		14.18 (2.85)	6 to 22
Age Group			
5-7 years old	3 (2.5%)		
8-12 years old	20 (16.8%)		
13-18 years old	89 (74.8)		
18-25 years old	7 (5.9%)		
Gender			
Female	112 (94.4%)		
Male	7 (5.6%)		
Number of Health Problems Reported			
One	76 (63.8%)		
Two	36 (30.6%)		
Three	7 (5.6%)		
Reasons for Joining 2Rs project			
Psychosocial issues	27 (21.3%)		
Social issue			
Sleep problem	20 (15.7%)		
Skin problems	19 (14.9%)		
Pain	7 (5.5%)		
Breathing problem	3 (2.3%)		
Gastrointestinal issues	3 (2.4%)		
Drug abuse	1 (0.9%)		
Others	47 (37%)		

More than half of the participants were under the care of the 2Rs project for 12 months. Results showed gradual improvements in health-related quality of life, problem behaviours, and adaptive functions within the first 12 months. Participants who joined the 2Rs project for longer than 12 months, reported less satisfactory health-related quality of life and a higher tendency in having problem behaviours. The results concerning health-related quality of life, problem behaviours, and adaptive function are discussed as follows.

Health-related Quality of Life

The perceived health-related quality of the residents was measured. Each of the four functionings had their own cut-off point (Varni, Burwinkle, Seid & Skarr, 2003), with a functioning considered at risk when its score was lower than the cut-off point. The cut-off score for each functioning varied, ranging from 62.99 to 72.98. The score of different functionings ranged from 59.06 to 89.22. These functionings were rated above the cut-off score most of the time. This meant that participants had a satisfactory level of health-related quality of life. Caregivers tended to rate their residents as having a better level of health-related quality of life than the resident participants rated themselves. The mean and standard deviation of PedsQL 4.0 are shown in table 2.

Table 2 Mean and standard deviation of health-related quality of life

	Before the first consultation (Pretest)		Three months after the first consultation (2 nd time point)		Six months after the first consultation (3 rd time point)		Nine months after the first consultation (4 th time point)	
	Participants	Caregivers	Participants	Caregivers	Participants	Caregivers	Participants	Caregivers
Physical Functioning	80.34 (14.47)	80.17 (13.83)	79.52 (15.87)	81.91 (14.89)	82.76 (15.12)	83.84 (16.40)	82.00 (16.37)	85.22 (15.09)
Emotional Functioning	59.06 (22.10)	59.49 (17.17)	62.16 (21.57)	63.15 (16.19)	64.75 (24.52)	66.8 (16.22)	73.20 (23.22)	66.54 (17.76)
Social Functioning	77.45 (20.38)	68.74 (20.02)	78.78 (18.83)	72.53 (15.19)	82.83 (17.88)	74.38 (19.12)	82.00 (19.47)	68.27 (20.19)
School Functioning	67.71 (20.85)	68.22 (15.96)	67.63 (21.71)	68.7 (17.08)	72.25 (18.54)	71.56 (15.09)	76.20 (19.43)	69.62 (16.24)
Total Score	72.16 (15.22)	70.59 (12.21)	72.94 (16.03)	72.77 (12.03)	76.32 (15.25)	74.97 (13.19)	78.83 (18.09)	74.08 (14.20)

Participants had a high level of wellness before and during their participation in the 2Rs project. Physical functioning was reported, by both participants and caregivers, as the best functioning among the four types of functioning.

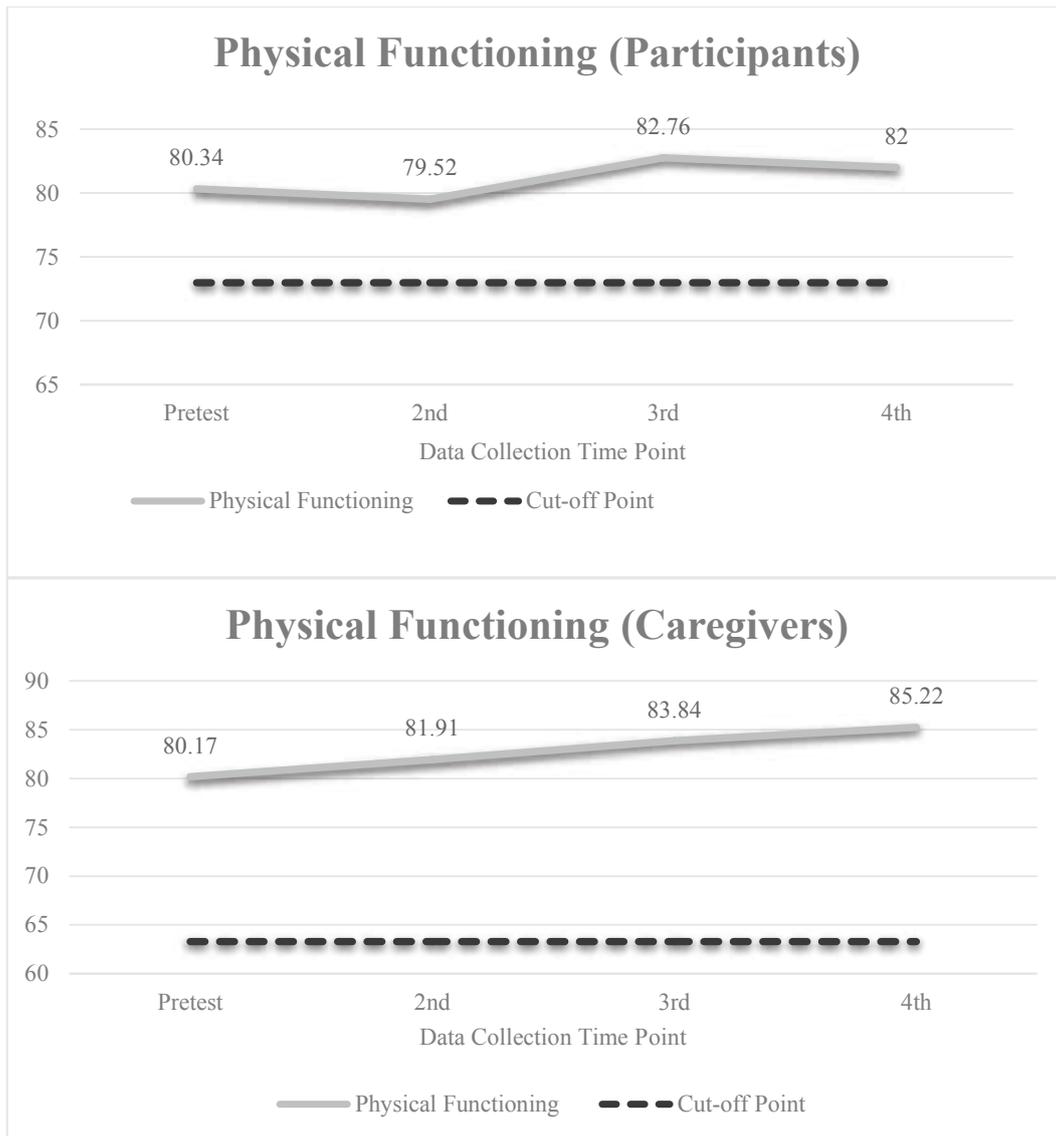


Fig 1. Physical functioning rated by participants and caregivers

Emotional functioning was reported as the weakest health-related quality of life functioning type. Gradual improvements were observed in the ninth month after participation in the 2Rs project. However, participants perceived themselves to have achieved greater improvements than their caregivers perceived they had.

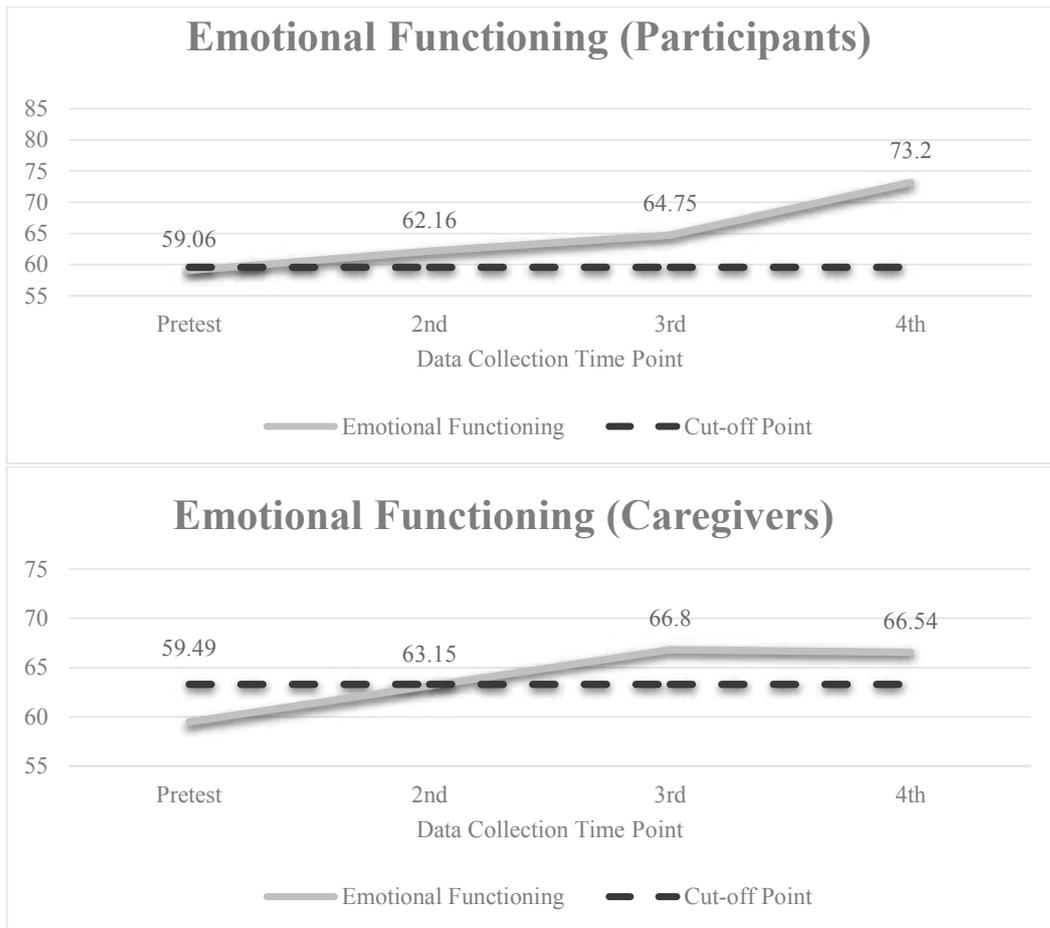


Fig 2. Emotional functioning rated by participants and caregivers

High levels of social functioning were also reported by participants and their caregivers. However, contradictory reports from participants and their caregivers were noted. Participants perceived improvements in social functioning while caregivers reported a deterioration of social functioning in the ninth month after participation in the 2Rs project.

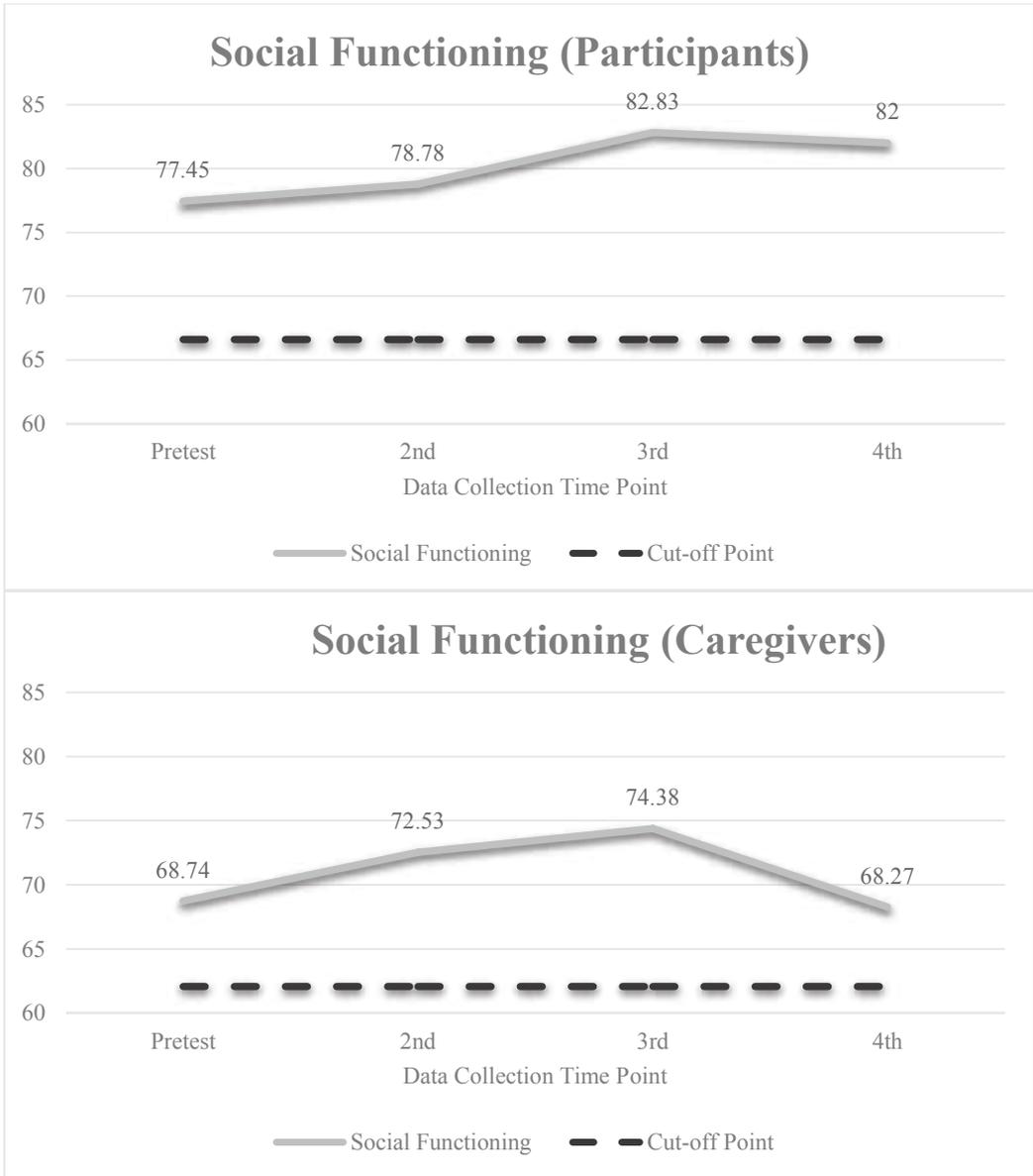


Fig 3. Social functioning rated by participants and caregivers

Fair school functioning was reported before participation in the 2Rs project. Participants reported greater improvement in their school functioning than their caregivers reported in the ninth month of participation in the 2Rs project.

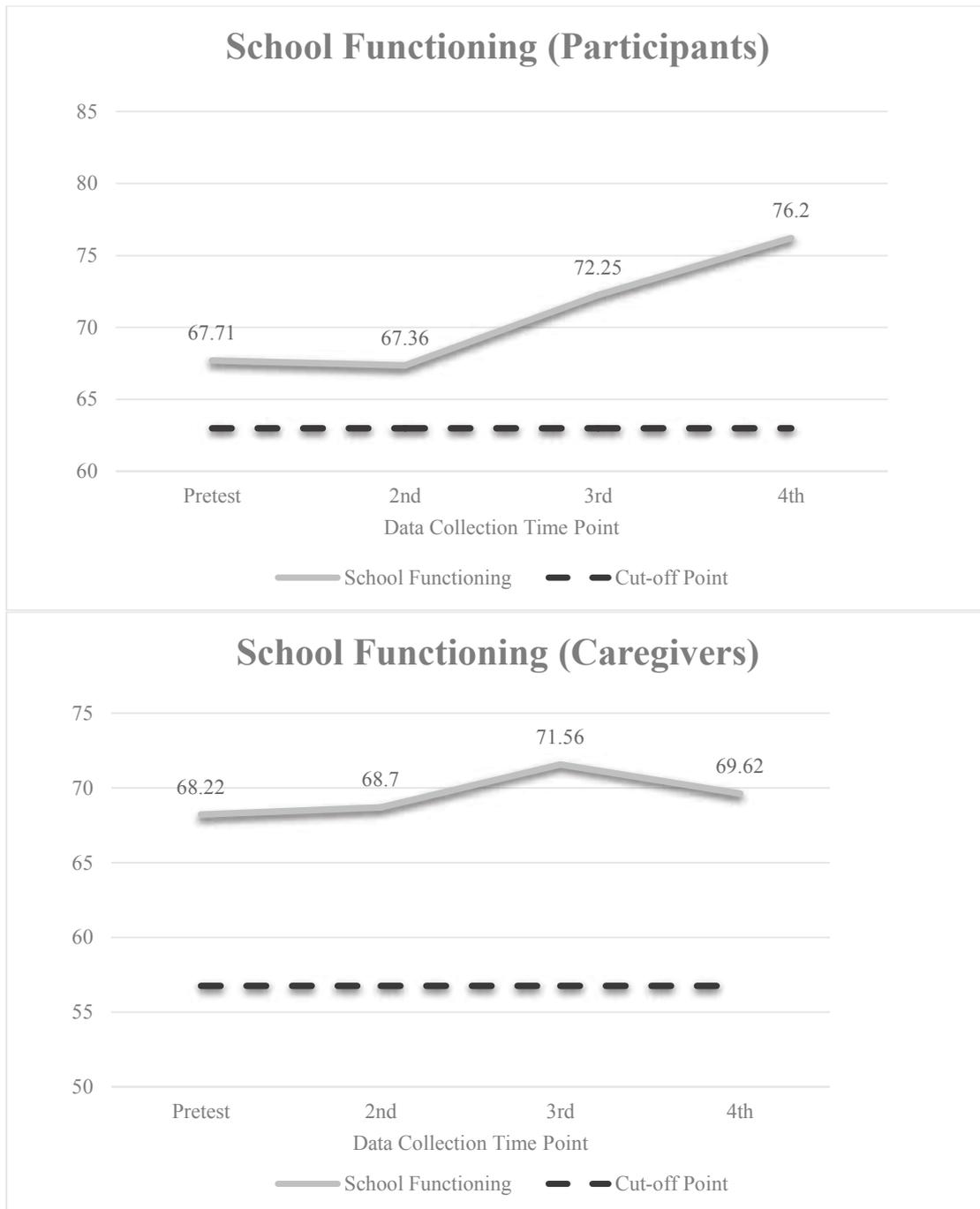


Fig 4. School functioning rated by participants and caregivers

Problem Behaviours

Problem behaviours of participants who were under 18 years old (n= 113) were measured. Unlike PedsQL 4.0, higher scores in each subscale meant a higher tendency to have problems in that particular subscale. Although the mean scores for all subscales in CBCL were within normal range, 3.4%-17% of participants reached either the borderline range or clinical range in at least one subscale. A low level of somatic problems was reported. On the other hand, in

participants under 18 years old a high level of social problems was found. The level of behavioural problems varied throughout participation in the programme.

Table 2 Mean and standard deviation of problem behaviours

	Before the first consultation (Pretest)	Three months after the first consultation (2 nd time point)	Six months after the first consultation (3 rd time point)	Nine months after the first consultation (4 th time point)
Anxious-depressed problems	59.26 (8.95)	58.31 (9.45)	56.19 (8.21)	57.51 (9.28)
Withdrawn-depressed problems	59.84 (8.22)	59.17 (8.39)	57.01 (6.02)	58.16 (6.34)
Somatic problems	58.87 (7.78)	58.18 (9.09)	57.89 (8.22)	57.87 (8.56)
Social problems	63.48 (10.23)	61.25 (8.56)	62.08 (9.13)	62.25 (9.08)
Thought problems	61.06 (8.32)	58.97 (8.60)	56.79 (7.16)	57.03 (7.20)
Attention problems	62.17 (10.41)	60.25 (8.06)	61.04 (8.32)	59.48 (6.31)
Rule-breaking behaviour	61.95 (8.47)	61.13 (7.68)	61.13 (6.94)	60.51 (7.72)
Aggressive behaviour	60.22 (8.64)	59.31 (8.32)	59.71 (8.62)	59.81 (8.71)

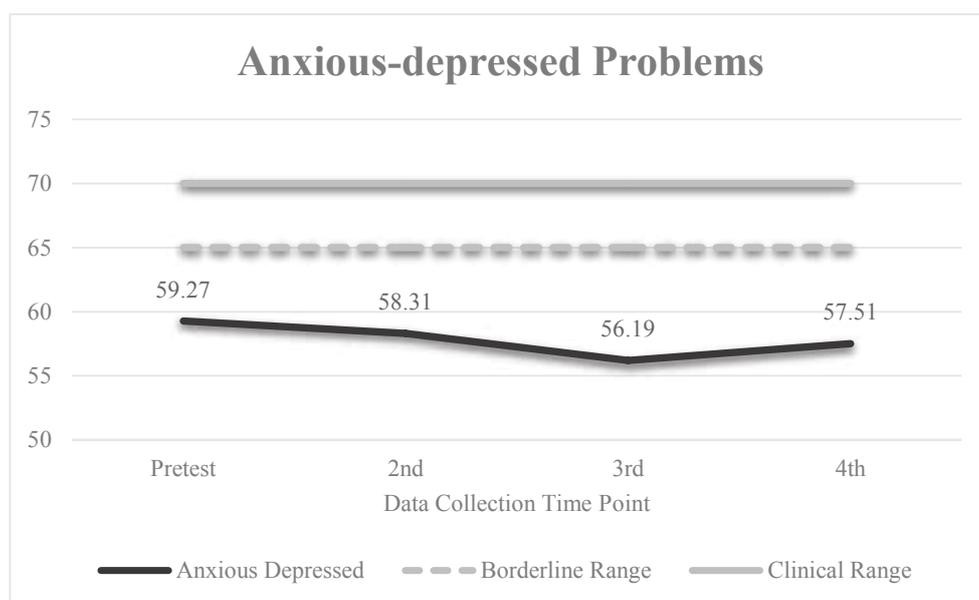


Fig 6. Anxious-depressed problems rated by caregivers

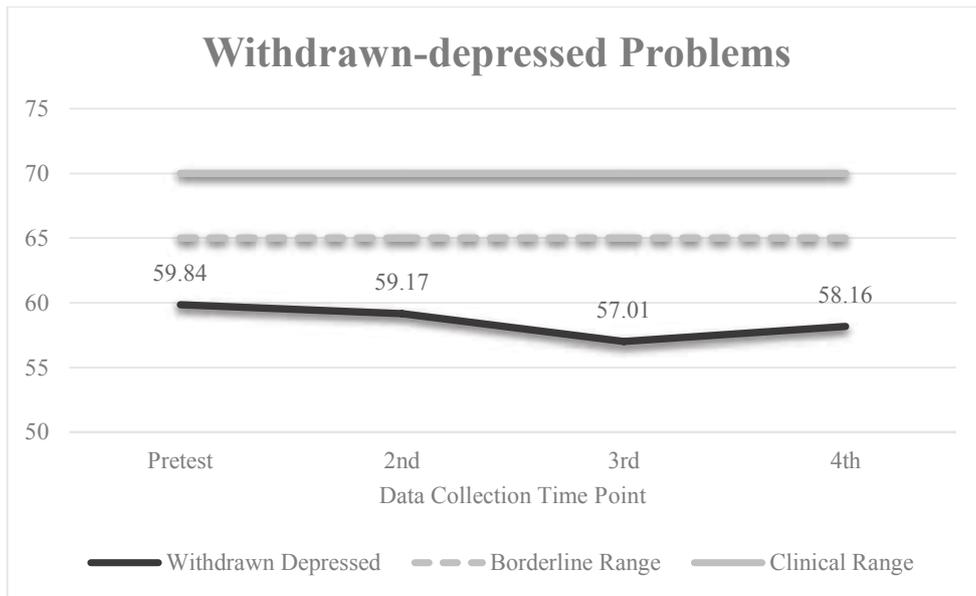


Fig 7. Withdrawn-depressed problems rated by caregivers

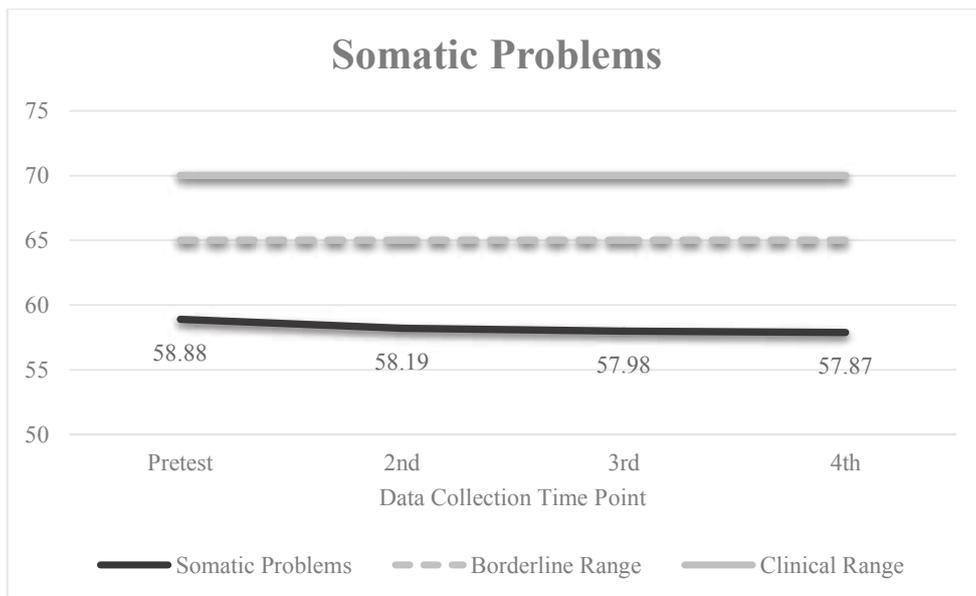


Fig 8. Somatic problems rated by caregivers

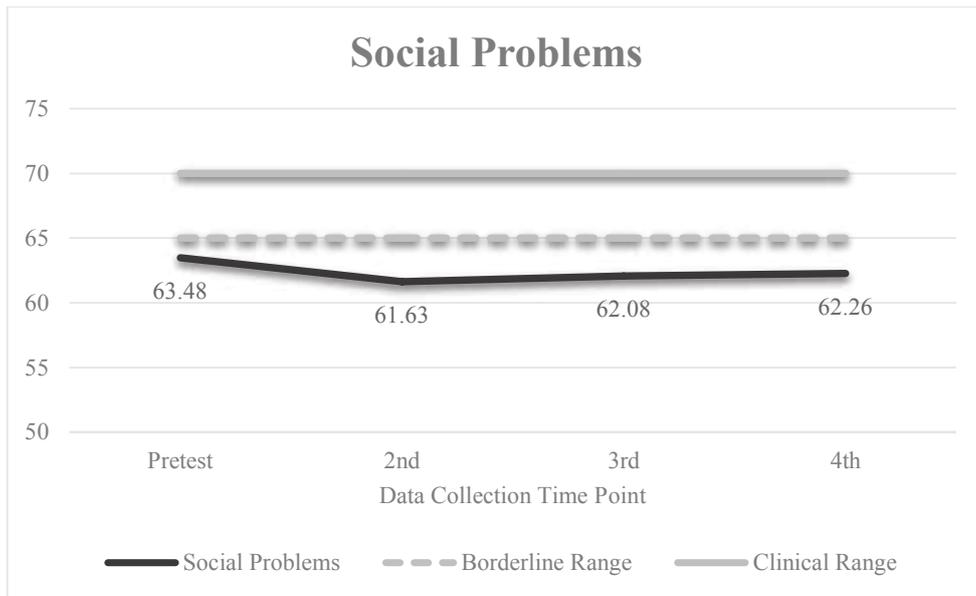


Fig 9. Social problems rated by caregivers

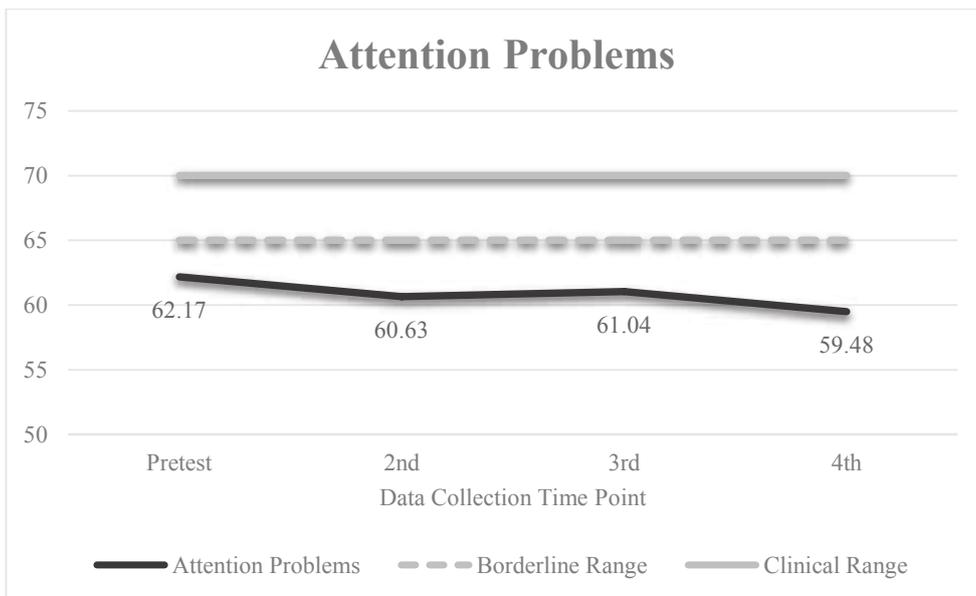


Fig 10. Attention problems rated by caregivers

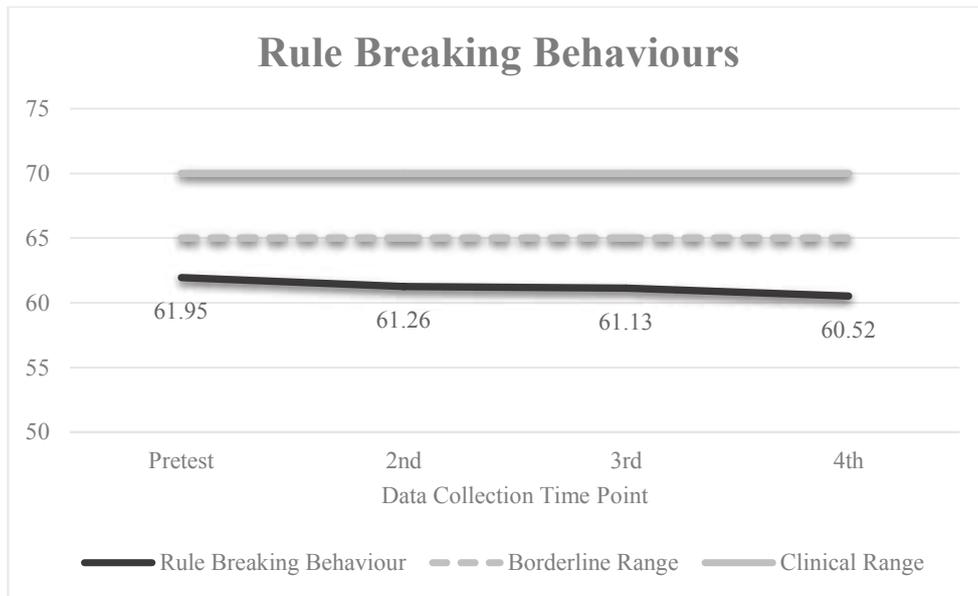


Fig 11. Rule breaking problems rated by caregivers

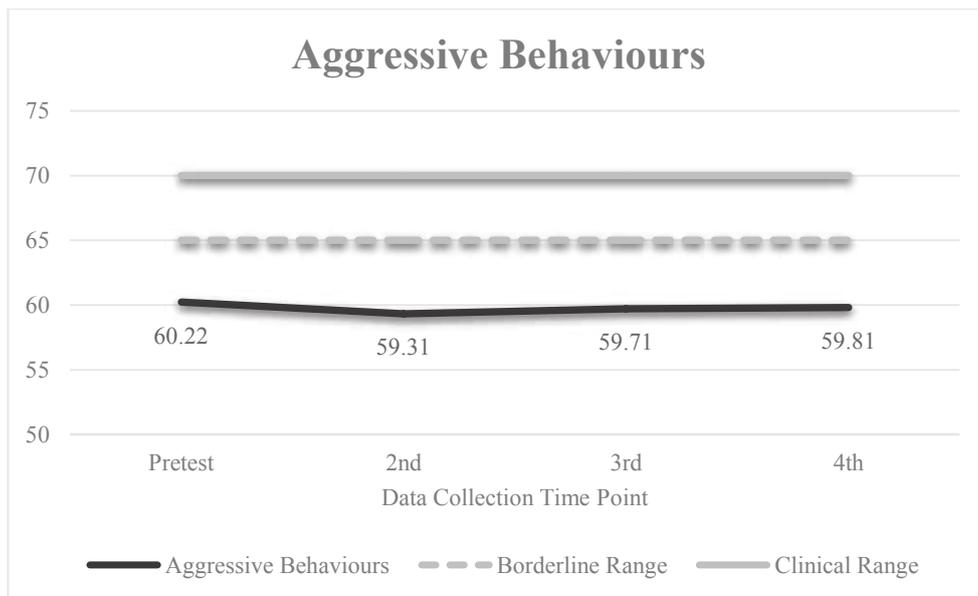


Fig 12. Aggressive problems rated by caregivers

The problem behaviours of participants aged over 18 years old were rated by their caregivers. Problem levels in all subscales were within the normal range. None of these participants reached either borderline range or clinical range. A low level of somatic problems was reported. On the other hand, a high level of withdrawn-depressed problems was found in participants aged over 18 years old. The level of behavioural problems varied throughout participation in the programme.

Table 3 Mean and standard deviation of problem behaviours rated by caregivers

	Before the first consultation (Pretest)	Three months after the first consultation (2 nd time point)	Six months after the first consultation (3 rd time point)
Anxious-depressed problems	58.83 (8.28)	59.75 (5.06)	60.33 (10.32)
Withdrawn-depressed problems	64.84 (4.4)	65.75 (5.91)	59.00 (6.02)
Somatic problems	56.17 (7.62)	57.00 (6.05)	54.83 (4.16)
Thought problems	59.00 (12.49)	61.75 (10.9)	61.50 (12.63)
Attention problems	59.00 (7.62)	68.00 (11.46)	63.00 (17.66)
Rule-breaking behaviour	58.16 (10.28)	63.75 (9.25)	61.00 (8.58)
Aggressive behaviour	60.00 (8.92)	65.50 (7.14)	58.83 (6.52)

Adaptive Functioning

Participants over 18 years old were also asked to rate their adaptive function. A low level of somatic problems was reported by these participants. On the other hand, a high level of social problems was found in participants aged under 18 years old. The level of behavioural problems varied throughout participation in the programme.

Table 4 Mean and standard deviation of adaptive functioning

	Before the first consultation (Pretest)	Three months after the first consultation (2 nd time point)	Six months after the first consultation (3 rd time point)
Relationship with family	36.67 (15.27)	49.67 (9.50)	44.20 (10.44)
Friendships	41.33 (0.57)	44.67 (11.54)	43.00 (9.59)
Occupational functioning	42.00 (13.22)	38.50 (9.19)	45.60 (9.89)
Personal Strength	37.00 (1.73)	36.60 (9.52)	34.86 (5.13)

Comparison before and after participation in the 2Rs project

The performance of all subscales in both PedsQL 4.0 and CBCL in four time points was compared by RM-ANOVA. Table 5 shows the results obtained on both PedsQL 4.0 and CBCL before the first consultation, after 3 months, after 6 months, and after 9 months, with mean differences at 95% confidence intervals. Regarding the perceived health-related quality of life in participants aged less than 18, there was a significant increase in physical functioning from baseline to the third instance of data collection [$F(1.98,79.51)=3.192$, $p=0.47$]. Similarly, a significant increase in physical functioning from baseline to the third instance of data collection was also found in the caregivers' health-related quality of life ratings [$F(2.00,48.00)=311.81$, $p=0.20$]. There was no significant change in emotional functioning, social functioning, and school functioning over time for the perceived health-related quality of life in these participants. For the problem behaviours, thought problems significantly decreased from baseline to the third instance of data collection [$F(3.00,81.00)=3.75$, $p=0.02$]. However, there was no statistically significant change in anxious-depressed problems, withdrawn-depressed problems, somatic problems, social problems, attention problems, rule-breaking behaviour, and aggressive behaviour. RM-ANOVA was not performed for the subscales in ABCL and ASR due to the small sample size.

Table 5 Performance in health-related quality of life and problem behaviour

	Participants		Caregivers	
	Variance Ratio (<i>f</i>)	<i>p</i>	Variance Ratio (<i>f</i>)	<i>p</i>
Health-related quality of life				
Physical Functioning	3.192	0.04*	4.28	0.02*
Emotional Functioning	1.85	0.17	1.03	0.36
Social Functioning	1.93	0.16	0.23	0.79
School Functioning	0.46	0.63	0.04	0.96
Total Score	2.12	0.13	0.16	0.85
Problem behaviours				
Anxious-depressed problems			1.43	0.24
Withdrawn-depressed problems			1.49	0.22
Somatic problems			0.76	0.51
Social problems			0.63	0.98
Thought problems			3.75	0.02*
Attention problems			0.05	0.95
Rule-breaking behaviour			0.34	0.79
Aggressive behaviour			0.18	0.89

($p < 0.05$, * statistically significant)

In summary, participants showed better performance in physical health and had fewer thought problems after participating in the 2Rs project. This means that the 2Rs project likely improved both the physical and psychological health of its participants.

DISCUSSION

This study provided an overview about the health status of children and adolescents in Hong Kong's residential children and youth homes. The physical health status of these residents was similar to that of other children and adolescents in Hong Kong (Department of Health, 2010). The majority of participants were reported to have a high level of physical health. The prevalence of eczema and pain for residents was also similar to that of non-institutionalised children (Department of Health, 2010). For psychosocial health, a higher prevalence of various behavioural problems was found in participants of the 2Rs project in comparison to that of non-institutionalised children (Department of Health, 2010). Various risk factors explained the less satisfactory psychosocial health of 2Rs participants. These included being raised in institutions, being abused, and enduring neglect (Kieling et al, 2011). They also had a higher chance of suffering from early onset mental disorders.

In addition, the majority of 2Rs project participants were adolescents. They faced rapid changes in physical, cognitive, social, emotional, and sexual development (World Health Organisation, 2018). This contributed to health issues in various forms. For example, sustaining unintentional injuries, coping with sexual and reproductive health problems, and attempting self-harm.

The health issues experienced by 2Rs participants were not only related to the rapid development of adolescence but was also related to their lifestyles. Some 2Rs participants suffered from sleep problems and athlete's foot. These kinds of health issues could be related to a lack of knowledge about healthier lifestyles (World Health Organisation, 2018). The results of this study provide an insight into the health service for institutionalised children and adolescents. Hence, the recommendations below are suggested resolutions to various health issues and methods to further the promotion of better health to children and adolescents in residential children and youth homes.

RECOMMENDATIONS

The 2Rs project was found to be beneficial for the physical and psychological health of its participants. The research team would recommend continuing the implementation of the 2Rs project as standard practice. The services of the 2Rs project should also be extended to all residential care homes for children and adolescents in Hong Kong so as to maximise the potential benefit for these residents.

According to the results of this study, three recommendations could be made to provide more cost effective and better health services for children and adolescents in residential care homes. These recommendations concern three aspects, namely the enhancement of early identification and intervention regarding psychosocial health issues, the introduction of a lifestyle modification programme, and the introduction of nurses to residential care homes.

1. Enhancements for the early identification and intervention of psychosocial issues

A high prevalence of psychosocial health issues were found in children and adolescents during this study. As discussed in the previous section, this could be related to the complexities of their backgrounds. Current practice in the 2Rs project relied on the observations of caregivers and social workers in the residential children and youth homes. The application of universal screening to all residents by empirical tools (such as CBCL) is suggested. In addition, regular services by a clinical psychologist should be introduced to all residential child and youth homes so that the early identification of psychosocial health issues can be achieved, and that early intervention could also be implemented for those residents in need.

2. Introduction of a lifestyle modification programme

The 2Rs project provided medical consultation and treatment to manage these types of health issues. The health issues suffered by participants of the 2Rs project was closely related to their lifestyle, such as sleep problems, skin problems, and gastrointestinal problems (World Health Organisation, 2017). A lifestyle modification programme would serve as a synergistic strategy to enhance the effectiveness of the 2Rs project (Sarvestani, Jamalfard, Kargar, Kaveh & Tabatabaee, 2009; Shetty, Prakash & Prakash, 2015). It could also empower residents to take control of their own health and daily lives.

3. Introduction of nurses in residential children and youth homes

The health issues identified during the 2Rs project revealed that several participants experienced some kind of chronic disease, such as attention deficit hyperactivity disorder and sleep problem etc. They were required to receive long term treatment and undergo lifestyle modification. Caregivers in residential children and youth homes may not be qualified to manage chronic conditions of this kind (Schneiderman, 2008). Registered Nurses would be able to fill this service gap by providing ongoing assessments, medication reviews, counselling, and health education to participants and caregivers (Bertram, Narendorf & McMillen, 2013; Schneiderman, 2008). Bertram, Narendorf & McMillen (2013) further reported that professional nurses in residential children and youth homes could not only enhance the effectiveness of traditional medical treatments but would also be able to promote the emotional regulation of residents. The introduction of Registered Nurses to residential care homes could improve the health of residents in a wholistic way.

CONCLUSION

The 2Rs project was the first programme designated to enhance the health of residents in residential children and youth homes in Hong Kong through a wholistic health approach. This study provided an overview about the health issues encountered by these residents and the effectiveness of the 2Rs project. These residents suffered from the common physical health problems of adolescents and various psychosocial issues. Treatment from the 2Rs project was provided to those residents whose health was at risk. The result of this study revealed that the 2Rs project was able to identify the health issues of residents early, take care of health problems from a wholistic approach, and improve the health of the project's participants, especially for physical health and mental health issues.

In future, the 2Rs project should be adopted as standard practice and be extended to all residential children and youth homes in Hong Kong. In addition to the project's current practice, the enhancement of early identification and intervention for psychosocial health issues, the introduction of a lifestyle modification programme, and the introduction of nurses to residential care homes is recommended to enrich the current 2Rs project. The recent 2Rs projects served as a pilot scheme which showed improvements in the wholistic health of residents. These residents in residential children and youth homes need the right care at the right time. The sustainability of the 2Rs project relied on support from the government through policy making and the provision of resources. With the insights gained from this study, the health of deprived children and adolescents will benefit and a burden on society in the long term will be relieved.

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ACKNOWLEDGEMENT

Special thanks to the participating residential children and youth homes, home participants, house parents, youth supervisors, caseworkers, wardens, and members of the Right Care, Right Time (2Rs) Project. Data collected from participants forms an integral part of this research. Their contributions provide insights into evaluating effectiveness of the wholistic care model for residential children and adolescents.

鳴謝

特別感謝參與研究項目的三所兒童及青少年院護機構、宿生、家舍家長、青年導師、個案社工、舍監和 “Right Care, Right Time (2Rs)” 計劃的成員。從受訪者所收集的數據建立了這研究項目的重要部分，他們的貢獻為評估兒童及青少年院舍全人照護模式的成效加深了見解。

Conducted by: School of Nursing and Health Studies,
The Open University of Hong Kong

Commissioned by: Precious Blood Children's Village
Evangel Children's Home
Sisters of the Good Shepherd

for the Right Care, Right Time (2Rs)
Project*

November 2020

Not for sale

Designed & published by: Differway Company Limited

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Village, Evangel Children's Home and Sisters of the Good Shepherd

*Project 2Rs (phase 2) is sponsored by:

Chan Dang Social Services Foundation (major sponsor) &

Ng Teng Fong Charitable Foundation (sponsor)

