

Exploring a Safety Measure Within Dutch Child Protection Case Management

Brigit Rijbroek*, Robbert Huijsman, Cora Bartelink and Mathilde Strating

Erasmus School of Health Policy and Management, Rotterdam, Netherlands

*Corresponding Author: Brigit Rijbroek, Erasmus School of Health Policy and Management, Rotterdam, Netherlands.

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Abstract

Objectives: Current study explores the potential of the safety rating scale in order to determine the surplus value for evidence based practise. This study wants to contribute to this knowledge gape by exploring the safety scale by analysing the change between two safety ratings. First, the absolute change in safety is investigated. Secondly the study explores to what extent family background characteristics and case management characteristics determine the extent of change in perceived safety.

Materials and Methods: The study analysed 105 Dutch child protection cases who had registration files with filled out LIRIK checklist, Action Plan and additional baseline safety and end safety measure as perceived by case managers.

Results: On average perceived safety increased from an insufficient level to sufficient level. Significant regression coefficients with larger changes for primary school children (6 - 12 years) and lower changes for children within the 'socio economic problems cluster'. The results reveal significant vulnerability for preschool children and families attending the socio-economic cluster due to limited improvement.

Conclusion: According to this study the safety measure can be of value to outcome monitoring. The safety measure is a practical measure that reflects on the current state of safety within a family according to professionals and can be used on several occasions during case management. In addition, on aggregated level pre and post measures can be analysed for quality management purpose. Further exploration of this measure is needed.

Keywords: Safety Measure; Dutch Child Protection; Safety Rating Scale

Background

Clients, professionals, managers and policy makers have an increasing need to evaluate the effectivity of youth health care interventions such as child protection [1]. Every child has the right to be protected from child abuse and neglect. According to the Convention on the rights of the child (1989) it is the obligation of national government to establish a child safety system that ensures the survival and development of the child. Child protection services is part of such a national safety system and provides coercive care in families with a family court order in order to stop maltreatment. There is a great necessity to constantly reflect on the quality of such services. In order to do so, thorough effect monitoring needs to be integrated into the general quality management strategy of child safety systems [2].

Worldwide, child protection services have trouble integrating effect monitoring [3]. In addition, no study has found significant effects for child protection case management nor case management in the wider range of social work [3-6]. Some studies claim this is caused by implementation problems child protection services deal with such as the absence of a monitoring culture or clear outcome measures [7]. This study wants to contribute to the search for a contributing outcome measure that is already commonly used in daily practise.

According to literature, effective quality management consists of measures that help to reflect on the results for clients [8]. In order to define clear outcome measures as such requires clear definition of the presenting problem, the target population for whom the intervention was designed (input), the causal processes underlying the intervention program (process), and identification of its expected outcomes [9]. This monitoring strategy is challenging within child protection systems in many ways.

The first challenge is that child protection lacks a clear definition of the problem and target population. The Dutch law justifies a child protection intervention in cases of severe developmental threat, is a matter of professionals interpretation. Many child protection cases have a background of maltreatment. Looking at theories about child maltreatment little is understood about the exact phenomenon. It is well understood that child maltreatment is a complex interacting pattern of factors in which especially parents are large contributors [10,11]. Therefore, the improvement in child protection families is depending on a web of multiple interacting components in which no direct cause and effect pattern can be appointed. This challenges the ability to reflect on progress in child protection.

A second challenge for measuring effectivity in child protection is the nature of case management itself. Case management is an assessment and referral strategy and is not an intervention pursue [12]. Case management analyses family problems and initiate health care interventions that support severe family problems. This often results in complex coalitions between several health care providers in which limits the identification of each contribution to families' health care outcome.

Despite these challenges, it is generally understood that monitoring attempts are needed in order to be able to constantly increase the quality of child protection services [3,7]. In the Netherlands, youth health care came up with a set of outcome measures for youth health care interventions [13,14]. However, one on one incorporation of these measures into child protection services was limited due to proper fit of the monitoring items to the actual purpose and intervention trajectory of child protection services [15]. Therefore, the initial measures were evaluated and reframed which led to a set of outcome measures that give insight into the intervention trajectory and client experience. However, there was debate about a measure that could actually detect the degree to what of the intervention targets was achieved. The debate lay in the above-mentioned challenges namely the lack of clear definition of the overall goal of child protection interventions.

The Dutch Youth act (2015) state that an child protection intervention is justified in cases of severe developmental threat. It would therefore be appropriate to define an outcome measure that reflects on the decrease of a developmental threat. However, in practice a developmental threat entails an interacting multi-dimensional process within a family as we have seen previously. In order to make a next step, exploration of the developmental threat is necessary. According to this study, the justification of a child protection case management intervention mainly lies in diminishing the developmental threat.

Current child protection services monitor safety during the intervention. The safety measure was first introduced in the Signs of Safety (SOS) approach by Andrew Turnell. This solution focused approach encourages people to deal with problems themselves and stimulates participation [16]. The safety measure is one of the tools during child protection. Child protection workers, parents and children, monitor

safety with a 0 - 10 scale, with 0 reflecting extreme unsafety and 10 extreme safety [17]. Until now, child protection services hesitate to experiment with this safety measure, mainly because it is not validated yet. A process similar to the numeric pain scale used in general medicine. At first, perceived pain was seen as a subjective measure and was therefore controversial. However, after years of development it is now used for practical, policy and scientific purposes on a daily bases [18]. It is therefore worthwhile to explore the safety measure. Mostly because it supports daily practise and could monitor results for clients too.

This study, therefore, explores the safety measure as outcome measure for child protection. We hypothesize that the safety measure can identify improvement in safety and therefore analyse the result of a child protection case management. The following research question is discussed: Can the safety measure bring insights in the effect of child protection case management? We first explore the improvement of safety during case management. Next, we explore the relation to case characteristics and process characteristics in order to understand the effect of case management.

Methods

Research design

This explorative quantitative study is part of a larger evaluation study on the strengths-based and safety-oriented approach to child protection casework in the Netherlands. We used client registration files from one Child Protection Service (CPS) agency. According to Dutch Privacy Law (2004), a CPS is allowed to use client registration files anonymously for policy development and research purposes only. The research procedure was tested and approved by the Medical Ethics Committee of Erasmus University Medical Centre (MEC-2-14-020).

Research setting

The study took place in one CPS agency in the Netherlands, which executes case management for juvenile court-ordered family supervision for children aged 0 - 18 years (Dutch Youth Act, 2015). The aim of child protection case management is to protect children from further developmental threats and improve developmental health (Dutch Youth Act, 2015). The family supervision order is based on a process in which developmental threats are assumed, assessed and confirmed. It usually starts with a suspicion of developmental threats due to parental inadequacy or maltreatment by a general youth care worker, teacher or other citizen (Ministry of Security and Justice, 2015). Concerns are referred to the Child Care and Protection Board (CCPB) who in their turn assess the need for conviction. The juvenile court then decides for a family supervision order either with or without custodial placement for the duration of one year with possible extension [19]. Next, CPS case management starts.

CPS workers work according to the Delta Method, which supports them during the process. The method distinguishes four steps: 1) collecting strengths and weaknesses, 2) interpreting these in terms of developmental threats, 3) defining the desired situation and 4) making a proper plan with goals and support [12]. CPS workers use a systematic risk assessment checklist, the LIRIK (in Dutch: Licht Instrument Risicotaxatie inzake Kindveiligheid) and safety rating scale during the assessment process to assess child safety.

The case management process starts with a six week assessment stage in which the family situation is being assessed and plans are made. This process results in the so called Action Plan that consists of an extensive problem definition, goal setting and a safety and care

plan. Next, the case manager makes care referrals and monitors progress of goal realization and current safety. After one year, an evaluation of goal realization and safety takes place. Professionals use the LIRIK and safety rating scale again and provide a documented advice for ending or extending family supervision. The juvenile judge then concludes whether further measures are needed.

Procedure

The sample selection for this study consisted of collecting information from new incoming family supervision cases between August 2014 and March 2015 and included cases with filled out LIRIK and an Action Plan with additional baseline safety measure and end safety measure as perceived by CPS workers ($n = 105$). Data were retrieved from digital and paper client registration files administered by CPS workers. Clients were briefed by a letter and child protection workers received an e-mail with research specifics and procedures.

Researchers collected information about demographics, maltreatment, risk- and protective factors and the baseline perceived safety from the LIRIK and Action Plan. CPS workers filled out the LIRIK on paper, which was then entered into SPSS by four researchers. Information from the Action Plan Data were collected with a literature based paper checklist of risk and protective factors by two researchers. Researchers then inserted reregistered occurring risk and protective factors into SPSS and checked on insertion error. Interrater reliability was tested on 30 cases and showed substantial reliability with a Cohen's kappa coefficient of .64 [20]. Lastly, the perceived safety, the throughput time and occurrence of custodial placement were automatically generated from the digital client files and integrated into the SPSS database.

Participants

The sample consisted of 105 cases. The distribution of children over the age groups was as follows: 31% preschool (0 - 5 years), 29% primary school (6 - 12 years) and 41% secondary school and beyond (12 - 18 years). 53% was male and 81% had a Dutch nationality, 18% had more than one nationality. One third lived with one biological parent, nearly one third in co-parenting, 19% with both biological parents, 6% in combined family or foster family and 2% residential, 2% was unborn and 1% unknown. Two third (67.4%) were small families (1 or 2 kids) and one third (32.6%) came from large families (3 kids or more). Maltreatment was registered in 38% of the cases and 63% had no perceived maltreatment. Within the maltreatment cases 15% had two types, 11% domestic violence, 10% neglect and 2% abuse (including sexual abuse). Further, parents of these children were characterised by parental risks namely 31% multiple problems, 28% no risk factors, 17% major life events, 14% social economic problems and 11% poor parenting skills. The mean throughput time was 424 days ($SD = 165$, $min = 71$ and $max = 809$) and 34% of the children were placed in out-of-home care during CPS case management.

Measures

The safety measure is the dependent variable. The case characteristics and process characteristics of case management are the independent variables. The variables are defined as follows.

Perceived safety measure(s)

The safety measure perceived by CPS workers weighs the level of current safety at the assessment stage and evaluates progress during case management [16]. It is a 0 - 10 point rating scale with 0 being extremely unsafe and 10 being extremely safe. It is reported during the assessment stage and during evaluation after one year of case management. In practice, a six or higher is considered to be sufficiently safe whereas five and lower can be seen as insufficient safety levels. According to the Signs of Safety approach the safety measure can be perceived at any given time during case management is judged by child protection case managers. The current study only included the

baseline and the last safety measure before closing the case. The validity of the safety rating scale is unknown.

Background characteristics

The sample include types of maltreatment, parental risk- and protective factors and demographic characteristics.

The types of maltreatment were collected in the LIRIK. The LIRIK is a systematic risk assessment checklist that supports professionals investigating child maltreatment [21]. In case of clear signs of maltreatment a case manager registers one or more types by selecting yes. The current study used both the original [22] and revised versions [23]. Based on user feedback, the 2014 version was slightly adapted to increase usability (information on adjustments is available on request). For analysis purposes, it was re-adjusted for comparison with the original version in the current study (information on adjustments is available on request).

Parental risk factors were collected with the LIRIK and additional information from the Action Plan as mentioned previously. This study included the parental risk and protective factors only, as they are known to be the biggest contributors to the occurrence of maltreatment [10,24]. The current study used the parental risk and protective clusters to determine characteristics of risk and protective factors as found by Rijbroek, *et al.* [25] namely 'multiple problem', 'social economic problems', 'poor parenting skills', 'major life events' and 'no parental risk factors registered'. The four protective clusters included are: 'multiple protective factors without problematic youth', 'multiple protective factors with problematic youth', 'basic protective factors' and 'no protective factors registered'.

Demographics like age and gender were collected from the digital client registration files. Age was categorised in three age cohorts following the educational system in the Netherlands: 'preschool' (0 - 5 years), 'primary school' (6 - 12 years) and 'secondary school and beyond' (13 - 18 years).

CPS case management process variables

In order to understand differences in the amount of change in perceived safety, some process indicators were collected from the CPS database included like 'throughput time' and 'out-of-home placement'. Throughput time is the time from the start to the end of case management. Out-of-home placement is an intervention in which CPS workers and/or juvenile judges decide to relocate children to out-of-home care.

Analyses

First, the baseline safety measure and the safety measure at the end were analysed with descriptive. The change of safety was computed by extracting the safety measure at baseline from the safety measure at the end of case management. Paired samples t-test was done to investigate the change from baseline to end. Chi square analysis with perceived safety at baseline and the change score in perceived safety was done to further analyse how baseline safety relates to the degree of improvement in safety. Second, in order to investigate associations of background and process characteristics with the change in safety, several bivariate analyses were conducted for maltreatment type, risk- and protective clusters, age groups, gender, throughput time and out placement. Categorical variables were analysed with ANOVA or independent t-test and continuous variables were analysed with Pearson correlation. In order to investigate associations between the independent variables, ANOVA, independent t-test and Chi square were used. Based on the results we distinguished three

groups in terms of degree of change in perceived safety (stable low, sufficiently safe, improved) and also investigated descriptive of each of these groups. Third, in order to explain the change in safety correlations linear regression analyses using a stepped wise approach were executed. Perceived safety at end measurement was taken as the dependent variable and in the first step we corrected for baseline perceived safety, after which variables that were found to be significantly related to perceived safety in the bivariate analyses were entered step by step. Only the final model will be shown in the results section. Based upon the results we performed an additional regression for the improved group.

To prevent type 1 error (false positive) we calculated effect sizes which provide information on the actual strength of the relationship between variables [26,27]. Following Cohen [28] we categorize effect sizes (f) into small (0.10), medium (0.30) and large (0.50).

Results

The results present descriptives, group differences and regression analyses.

Descriptives of perceived safety

Table 1 describes the perceived safety at baseline (M0; the start of case management) and at the end of case management (M1; after one year). On average perceived safety increased from an insufficient level with a mean of 4.47 to sufficient levels at end of case management with a mean perceived safety of 6.23. The change in perceived safety was calculated by subtracting both safety measures. Paired samples t-test showed a significant increase in perceived safety with an average change of 1.77 points.

	M0	M1	Change in perceived safety
Mean (SD)	4.47 (1.01)	6.23 (0.99)	1.77 (1.17)
Minimum	2	3	-1
Maximum	8	8	4
Significant difference	t(104) = -15.41, p = 0.00		

Table 1: Descriptives of start, end and change in perceived safety (n = 105).

Crosstabs analysis with perceived safety at baseline and the change score in perceived safety was performed (Table 2). In 98 cases (93% of total), insufficient perceived safety at baseline (M0) was found (Table 2 summing up column 2 to 5). In 83 (85%) of these cases, a moderate insufficient safety measure of 4 or 5 (45% respectively 55%) was reported. In 15 (15%) cases, a severe insufficient safety measure of 2 or 3 was found.

Change in perceived safety*	Perceived safety at baseline							Total
	2	3	4	5	6	7	8	
-1,00	0	0	0	2	0	1	0	3
,00	0	0	2	1	1	1	2	7
1,00	1	0	9	26	0	0	0	36
2,00	0	2	17	14	2	0	0	35
3,00	0	5	5	3	0	0	0	13
4,00	1	6	4	0	0	0	0	11
Total	2	13	37	46	3	2	2	105

Table 2: Crosstabs analysis between baseline perceived safety and the change in perceived safety.

*Change score: score M1-M0; higher score means improved safety.

Analysing the improvement in perceived safety it showed 81 cases (83%) with insufficient baseline measures and sufficient safety measures at the end. Further, 7 cases score a 6 or higher (summing up totals of column 6 to 8) at baseline which indicates sufficient perceived safety at the start of case management. Only 2 of these cases (29%) improved during case management. In one case of these cases (column 7) a deterioration of 1 point is found, and the remaining 4 cases stay stable over time.

In order to understand the improvement, we divided the 105 sample into three groups. The 17 (16%) cases with a perceived safety of 5 or lower at both baseline and the end is called the 'stable low' group. Safety in these cases was perceived as unsafe at baseline and remained to be perceived unsafe over time. The second group is called 'sufficiently safe' group (n = 7; 7%) who have perceived safety levels 6 or higher at both baseline and the end. Finally, the 'improved' group (n = 81; 77%) who have a perceived safety measure of 5 or lower at baseline and 6 or higher at the end safety measure. These cases improved from insufficient levels of safety to sufficient levels of safety at the end.

Exploring effect of case and process characteristics on change in perceived safety

No significant relation between change in perceived safety and gender, type of maltreatment and protective clusters were found (See table 3). However, significant differences were found for age groups, with largest improvement for primary school children (6 - 12 years) and lowest for pre-schoolers (0 - 5 years). According to Cohen, this indicates a medium effect size (overall $f = 0.28$).

Variable		Mean (SD)	Bivariate test
Maltreatment	n = 105		t(103) = 0.15, p = 0.88
No	65	1.78 (1.26)	
Yes	40	1.75 (1.03)	
If yes: Type of maltreatment	n = 40		F(3, 36) = 1.18, p = 0.33
Neglect	10	1.30 (0.82)	
Abuse	2	1.50 (0.71)	
Domestic violence	12	1.75 (0.97)	
2 or more types	16	2.06 (1.18)	
Parental risk clusters	n = 105		F(4, 100) = 2.46, p = 0.05
No risk factors registered	26	1.96 (1.28)	
Multi problem	30	2.00 (1.14)	
Major life events	19	1.95 (1.03)	
Poor parenting	12	1.58 (1.16)	
Social economic problems	18	1.06 (1.00)	
Parental protective clusters	n = 105		F(3, 101) = 0.68, p = 0.57
No protective factors registered	35	1.54 (0.85)	
Multiple coping parent with positive youth experience	13	1.85 (1.14)	
Multiple coping parent without positive youth experience	26	1.92 (1.44)	
Basic coping parents	31	1.87 (1.29)	

Age cohorts	n = 105		F(2, 102) = 3.52, p = 0.03
Preschool (0 - 5)	32	1.44 (1.08)	
Primary school (6 - 12)	30	2.20 (1.29)	
Secondary school and beyond (13 - 21)	43	1.72 (1.08)	
Gender	n = 104		t(102) = 0.99, p = 0.32
Boys	54	1.89 (1.14)	
Girls	50	1.66 (1.21)	
Throughput time (days)	n = 105	424 (165)	r = .21, p = 0.04
Custodial placement	n = 105		t(103) = 1.73, p = 0.09
No	69	1.91 (1.08)	
Yes	36	1.50 (1.30)	

Table 3: Relations between change in perceived safety case and process variables.

Furthermore, significant differences for risk clusters with the largest improvement in perceived safety for children with parents who have 'multi problems' and lowest change in perceived safety for the 'social economic problems' cluster. According to Cohen this indicates a medium effect size (overall $f = 0.34$). Significant differences between risk clusters were not found with respect to baseline perceived safety, indicating that these differences between clusters occurred over time during case management.

With regard to the process variables, significant positive small relations were found between change in perceived safety and throughput time ($r = 0.21$, $p = 0.04$; indicating a small effect size). This indicates that longer process time is related to a larger improvement in perceived safety.

In order to understand potential relations between case characteristics and process variables, we conducted several bivariate analyses (See table 4). Analysis of variance with throughput time and parental risk clusters showed significant differences between groups ($F(4, 100) = 8.36$, $p = 0.00$) with smallest throughput time for social economic problems ($M = 299$ days, $SD = 134$) and largest throughput time for multi problem ($M = 507$ days, $SD = 125$).

Furthermore, chi-square analysis showed a significant association ($\chi^2 = 20.60$; $p = 0.01$) between risk clusters and the three groups we distinguished earlier based upon change in perceived safety. The stable low group had significantly more cases within the social economic problems cluster (47%) than the improved group (10%). Table 4 shows the descriptives for each of the three groups separately.

Explaining the value of case and process characteristics to change in safety

In order to explain the change in perceived safety, hierarchical linear regression analyses for the total sample and the 'improved' group only were conducted. The first step corrects for the safety measure at baseline. Explaining variables that showed significant relations with the change in safety in the bivariate analyses were included, i.e. age groups, parental risk clusters and throughput time.

	Stable low (n = 17)	Sufficiently safe (n = 7)	Improved group (n = 81)
Maltreatment			
No	8	5	52
Yes	9	2	29
Type of maltreatment			
Neglect	4	1	5
Abuse	1	0	1
Domestic violence	1	0	11
2 or more types	3	1	12
Parental risk clusters			
No parental risk factors	1	3	22
Major life events	1	1	17
Social economic problems	8	2	8
Poor parenting skills	3	1	8
Multiple parental problems	4	0	26
Parental protective clusters			
Multiple coping parent with positive youth experience	0	2	11
Multiple coping parent without positive youth experience	3	2	21
No protective factors	6	1	28
Basic coping parent	8	2	21
Age cohorts			
Preschool (0 - 5)	6	3	23
Primary school (6 - 12)	3	2	25
Secondary school and beyond (13 - 21)	8	2	33
Gender			
Boys	9	2	43
Girls	8	5	37
Throughput time			
N	17	7	81
Mean (SD)	388.71 (181.03)	399 (198.47)	433.83 (159.52)
Custodial placement			
Yes	8	5	23
No	9	2	58

Table 4: Descriptives of three subgroups based on their change in perceived safety.

The regression model for the total sample is significant and explains 44% of the total variance. The first step of this model controls for perceived safety at the start of case management which explains 35% of the variance. The lower perceived safety at baseline the higher the increase in perceived safety over time. The second step adds age cohorts and increases the variance with 5%, with a significant regression coefficient for primary school children (6 - 12 years). This suggests that cases with children in primary school have a larger change in perceived safety compared with the preschool group. The third step adds risk clusters and increases variance with 4%. A significant negative regression coefficient is found for the 'socio economic problems' cluster, suggesting that this cluster has a smaller change in perceived safety compared with the no risks group. The last step adds process characteristics 'throughput time, which does not add explained variance.

Since the social economic cluster variable had significant effect in explaining the change in perceived safety and the fact that only 10% of the cases within the improved group could be assigned to this cluster, we performed an additional regression model for the improved group only.

The final regression model for the 'improved' group explains 59% of the variance. After correcting for the perceived safety at the start of case management, which explained 58% in the first step, in the second step age groups was added and explained an additional 3% of the variance¹. In the following steps risk clusters and throughput time had no additional effect. Compared to the earlier regression, the effect of the social economic cluster has diminished because of the low number of cases within this cluster in the improved group. Cases within the other clusters more or less show equal improved in perceived safety. In other words, for the improved group the risk clusters have no additional effect in explaining the degree of change in perceived safety. Since we selected the improved group for this analysis the effect of perceived safety at baseline on the change in perceived safety is now stronger ($\beta = -0.74$). Thus, the lower perceived safety at baseline the higher the increase in perceived safety over time.

Discussion and Conclusion

This study explored the safety measure as outcome measure. Its aim is to contribute to the search for insight in the effectivity of child protection case management. According to this study the safety measure can be of value to outcome monitoring. The safety measure is a practical measure that reflects on the current state of safety within a family according to professionals and can be used on several occasions during case management. In addition, on aggregated level pre and post measures can be analysed for quality management purpose. Further exploration of this measure is needed.

The safety measure in this study has brought several insights. First, professionals reported improvement in child safety in most cases (nearly four out of five cases). These cases improved their safety measures from insufficient at baseline (5 or lower) to sufficient at the end (6 or higher). In addition, cases with lower perceived safety at baseline often increased more over time. However, 16% of the cases were unsafe at baseline and remained unsafe over time (stable low group). This vulnerable group did not benefit from CPS case management. It remains unclear why those cases were closed. An explanation could be that a juvenile judge closes a case against the advice of a case manager or that parental authority is ended and carried over to a legal guardian (Civil law book 1, art. 261). A small group, about 7%, had sufficient safety level at the baseline and the end. This questions the necessity of the CPS case management. It stays unclear whether these cases are false positives or perhaps these cases had already improved the child safety during the juvenile trajectory before the start of case management.

¹Variance reported is based on adjusted R square which corrects for the number of predictors included, therefore variance dropped to 59% again in later steps.

Secondly, our study found significant effects for some background characteristics. For instance, children in the primary school age (6 - 12 years) seem to benefit most from case management as their safety levels improve the most. Preschool children have smallest improvement for safety which make them vulnerable. Alink [29] confirm this, stating a 1.8 times larger change for preschool age children for being maltreated. Regarding risk clusters, least benefits are found for children who have parents with social economic problems such as housing, unemployment, financial problems and social isolation are present. This vulnerability is also found in the study by Alink [29] who found a 3.6 times more chance of maltreatment. Strikingly, our in-depth analyses showed smaller throughput time in these cases. This is in contrast with the vulnerability of the social economic problems families face. Finally, the multi problem cluster shows similar changes in safety compared to the other three clusters (major life events, parental cluster and no risk cluster). This is in contrast with the common understanding that multi problem families often show little progress [30].

Limitation of the Study

The results of our explorative study should be interpreted with the following limitations in mind. First, we only included cases from one CPS within an urban area, which may jeopardize the generalizability to, for example, more rural areas with different demographic profiles. In addition, the sample size we used for this study was limited because of many exclusions due to missing end safety measures. Follow up studies bear in mind that investment in implementing the safety measure is required before monitoring it.

Second, this study used the perceived safety judgement made by professionals only. In addition, several studies show limited interrater reliability among child protection workers and even within a single child protection worker over time [21,31-33]. A single respondent approach may therefore, not fulfil the scientific requirements for a valid and reliable outcome measure, regardless how well trained the professionals may be. Therefore, it is highly recommended to include multiple groups of respondents in subjective rating scales like the safety measure in order to improve validity and reliability. Unfortunately, we were not able to include the perceived safety measures by children, parents and other caretakers due to missing data.

Finally, many data were missing from both problem characteristics and process characteristics. For example, 62.8% of the cases had no perceived maltreatment reported, which is in contrast with the proven safety issues in the family court order. A thorough understanding of the actual change within a family during case management requires data saturation based on proper adjusting registration facilities and registration behaviour. The system should provide relevant case characteristics like (suspicion of) maltreatment and (suspicion of) risk factors and professionals should enhance their registration and monitor skills.

Impact

Notwithstanding these limitations, this study provides a unique contribution to the scarcely measured effectiveness of CPS case management and the search for sufficient outcome measures. In this respect, current study can be seen as an attempt to monitor quality of case management. According to our findings the safety measure, and especially the change in this safety measure, can be used as one of the parameters in a quality monitor. Professionals perceived insufficient safety in 93% of the cases, justifying a CPS intervention. Moreover, 76% of the cases benefit from the CPS intervention by improving with at least one safety point. An improvement of 1 point seems little and is of debate as the pain rating scale incorporated an improvement of 2 points [18]. Follow up studies could explore a threshold as such.

Although this study has an explorative character, it already addresses relevant evaluation issues. The study shows smaller improvement for preschool age children and children with parents with social economic problems. This should stimulate a professional evaluation between practise, policy and science about the current approach and the potential for improvement. Thorough follow up evaluation could help to investigate the specific needs of the age group and reshape current case management for the better.

We have already addressed the importance of multi-respondent safety measures for scientific reasons. However, there is also a practical reason. It is well known that best monitors require close connection to daily practise of professionals and clients [13]. In the case of a safety measure, SOS describes it as a tool that constantly monitors the perceived safety of children, their parents and child protection workers. It enables them to talk about each other's viewpoints, detect indifferences and encourages participation [34]. In addition, on aggregated level, the multiple responses can be used to reflect on the child protection case management strategy. For instance by analysing to what extent children, parents and child protection workers agree on the safety measure.

In order to stimulate in depth understanding of the quality of child protection case management some adjustments are needed. Additional relevant measures should be included to the monitor like other outcome measures, family characteristics and process characteristics [35]. This requires a series of improvements.

First, additional outcome measures like goal realisation and client satisfaction should be added [15,35]. Goal realisation here reflects the extent to which health care goals put out at the start of the intervention have been achieved. Goal realisation could be measured by multiple respondents for instance by children, parents and child protection workers with a green-orange-red scaling. This does not only reflects the progress and result for the child but can also be used as a dialogue tool between child protection case manager and the family.

Second, basic information about the family situation like type of maltreatment, commonly known risk and protective factors need to be included. This requires an adjustment of current digital system and registration behaviour. A development as such can take place by bringing together practise, policy, science and information technology. A topic of debate can be "What is necessary to register, what information is of value?", "How well are we case managers at registering?" and "how well is our technology in supporting case managers in daily practise?" are relevant to consider.

Third, in order to understand the case management process, detailed information about the primary intervention trajectory is required. The following variables could be relevant: entry or re-entry, amount of contacts and sort of contacts (face-to-face, texting, e-mail etc), used interventions by case manager, referred health care, cause of closing the case.

Finally, in order to be able to aggregate all data on organisational or even national level it is highly recommended to accomplish a set of general agreed upon indicators [34]. The process of finding proper monitoring measures is an ongoing process where practise, policy and science have to try and retry in order to find proper measures that justify the outcome for patients and reflects on guidelines and policy [2,35,36]. This requires a learning space in which a dialogue between clients, practise, policy and scientists could occur about the meaning of the outcome measures. It takes courage to take steps like that. Hasty and judgemental interpretation of first outcome results should be avoided, as that could severely frustrate the process.

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