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Research Article

Ten Years of Infant Mental Health in the Netherlands: Who are the clients?

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ABSTRACT

Background: Infant Mental Health (IMH) is a topic of current interest that emerged over the past decades, concerned with alleviating suffering and enhancing the social and emotional competence of young children. Worldwide there is increasing recognition of infant psychopathology meriting intervention. However, there are still limited data regarding the prevalence of psychiatric disorders and socio-demographic characteristics of these youngest of patients in clinical settings.

Aim: This large, descriptive study aims at presenting the socio-demographic and clinical characteristics of infants referred consecutively to three outpatient Infant Mental Health teams in the Netherlands between September 2000 and July 2013.

Methods: The medical records of 783 infants were retrospectively examined and the data were collected from paper and electronic patient

files. Clinical and socio-demographic characteristics were categorized in child factors, developmental milestones, family factors and clinical outcome measures (DSM-IV, DC:0-3R, WIPPSI-III, SON-R 2½-7).

Results: Our sample showed significantly more boys (543, 69%) than girls (240, 31%) being referred to the Infant Mental Health teams. Most children were referred when they were four or five years of age, both boys and girls. Mean duration of treatment was about a year and a half (20.34 months, SD 18.87) and most reported diagnoses were ADHD/behavioral disorders, ASS and disorder in infancy/childhood NOS. Familial psychiatric disorders were reported in 242 families (41%). These findings are discussed in the light of earlier research.

Keywords: Infant mental health, Psychopathology, Preschool, DC: 0-3R

Introduction

Infant Mental Health (IMH) is a relatively new field, the origins of which can be found in the work of Selma Fraiberg in the 1970s [1-6], though it has clear roots in the psychoanalytic frameworks and the developmental psychology of the 1950s [7-10]. In the past decades, IMH emerged as an important international [11-13] and multidisciplinary [6,14,15] field of “inquiry, practice, and policy concerned with alleviating suffering and enhancing the social and emotional competence of young children.” [1] A growing body of research has shown that early life experiences are essential for brain development and other aspects of biological, emotional and social development [16,17]. Mental disorders at this early stage of life pose a significant developmental risk, but also show significant stability during

childhood [18-25] and constitute a risk for future psychiatric disorders later in life [26-28], rendering correct diagnosis and early intervention and treatment indispensable [29]. Zero to Three, a global non-profit organization, formulated in 2001 the generally accepted definition of IMH as “the developing capacity of the child to experience, regulate and express emotions; form close and secure interpersonal relationships; and explore the environment and learn – all in the context of family, community, and cultural expectations for young children [30].”

Regarding the age range to which the term infant refers, there is little consistency in the literature. Fraiberg, et al., [31] used the term infant for children from 0 to 2 years of age. The World Association for Infant Mental Health (WAIMH) focuses on children from 0 to 3 years of age [32]. However, considering

the extensive evidence underlining prenatal influences on childhood development and the extension of research and interventions beyond the first three years, Zeanah & Zeanah [1] decide to use the term infants for children from -9 months to 5 years of age, which is currently the accepted practice.

Worldwide there is increasing recognition of infant psychopathology meriting intervention [1,12,33,34]. The primary focus of IMH assessment, intervention and prevention initiatives is typically the infant-caregiver relationship which is considered as the principal mechanism for change [1,4,33,34]. Notwithstanding that the assessment of the child and his/her disorder is equally important and may not be undervalued. Research in this domain has only become systematic and rigorous recently, and much still needs to be uncovered [35]. Community based diagnostic prevalence studies [36-45] so far, show estimates of psychiatric disorders among infants ranging from 8% to 26%, which is in line with 10-15% prevalence found with older children and adolescents [1].

Thanks to the recent and ongoing development of an age-sensitive diagnostic classification system (DC: 0-3) by Zero to Three, of which the third edition was published very recently [34,46,47], clinical research is further facilitated. The DC: 0-3R [47], the second edition, was designed to be complementary to the DSM-IV [48], and only to be used when diagnostic classification wasn't better addressed by a DSM-IV diagnosis. The newest edition of this classification system, the DC: 0-5 [34], incorporates a broader spectrum of diagnoses for a wider age range (up to 5 years of age), making it independently usable and of great value in the infant mental health practice.

Up till now, there are limited and very heterogeneous data on specialized infant mental health clinical settings regarding the prevalence pattern of psychiatric disorders and socio-demographic characteristics of the patients. Twenty-one studies [29,49-68] of small sample sizes (ranging from 49 to 224), five studies [69-72] of moderate sample sizes (ranging from 274 to 414) and one study [73] of large sample size (875) have published data on the prevalence of psychiatric disorders in clinical samples using multiple classification systems. Study settings vary from outpatient child psychiatric clinics to specialized infant mental health units in community based centers or university hospitals. Of the moderate and large sample sized studies, only one moderate sized study [70] provides information on the socio-demographic characteristics of the sample. The authors believe this to be a gap in the current scientific literature, as painting a clear clinical picture of patient profiles is an important part of investigating this historically often overlooked very young population, contributing to the evaluation of current practice and inspiring further research regarding prevention measures, diagnostics and treatment planning. The study at hand, aims at contributing to the field by presenting the pattern of psychiatric diagnoses and the socio-demographic and clinical characteristics of 783 infants referred to three IMH teams in the Netherlands, providing a descriptive picture of the second largest clinical infant mental health sample so far.

Methods

Population and Setting

Participants were all infants aged 0-6 years referred to the outpatient IMH teams of Virenze Mental Health Care at three different geographical locations in the Netherlands between September 2000 and July 2013. This comprised data from 791 infants, of which 8 infant's parents did not give permission to examine the medical records of their child, resulting in 783 infants included in this study. The medical records of these 783 infants were retrospectively examined and the data were collected from paper and electronic patient files. All medical records included in this study were anonymized. The infants were referred by general practitioners, psychologists, school staff or other mental health institutions and suffered from often severe behavioral, psychological and developmental problems.

Procedure

Over a period of one and a half year, researchers from Virenze Mental Health Care collected data of preselected variables from physical and electronic files. A codebook was developed to categorize and quantify the data of this specific study. After completing data collection, the data file was carefully checked on inconsistent code use, missing values and multiple client numbers for the same client.

Measures/Materials

Clinical and socio-demographic characteristics were divided as follows:

Child factors and developmental milestones comprised gender, birth weight in grams, age in years, type of daycare and milestones (age of sitting, crawling, walking, speaking first words, and toilet training in months).

Family factors comprised age of the biological parents in years, education level of the biological parents, marital status of the biological parents, family composition, duration of pregnancy in weeks, existence of home violence.

(Clinical) outcome measures comprised duration of treatment in months, DSM-IV psychiatric diseases present in the family and psychiatric diagnosis of the child. Psychiatric diagnosis was determined by clinicians using the DSM-IV-TR48/DC:0-3R47. Child IQ scores were measured through testing with the Wechsler Preschool and Primary Scale of Intelligence-Third Edition- Dutch adaptation⁷⁴ or the non-verbal intelligence test SON-R 2½-775. Conduct problems were measured through using the qualitative scores of the Child Behavior Checklist for Ages 1½-576 completed by parents.

Statistical analysis

The statistical program SPSS version 23 was used for the statistical analysis. The data was checked on outliers and incompatible values within the variables and variables with large code sets were recoded into new variables with a maximum of twelve codes.

A descriptive analysis was ordered for all variables for the whole sample, as well as for both boys and girls. T-tests or Mann-Whitney tests were carried out to test for significant differences in means between boys and girls on all continuous variables. Level of significance was set at 0.05. Binomial, χ^2 and Fisher Freeman Halton analyses were done for all categorical variables.

Results

Results of the child factors can be found in Table 1 and Figure 1. In total 543 boys and 240 girls were referred to IMH services. The binomial test indicates that the difference in proportion of boys (.69) and girls (.31) is significant ($p = .00$, 2-tailed). More boys than girls were referred to IMH services. Most children were referred when they were four or five years of age, both boys and girls. The distribution of age of referral is the same across the categories boys and girls ($t = -.01$, sig 2-tailed = .98). Most children attended elementary school, both boys and girls. Looking at the residual types of day-care, a significant difference was found for gender ($\chi^2 = 13.47$, $p .02$); boys are overrepresented in medical day-care and special

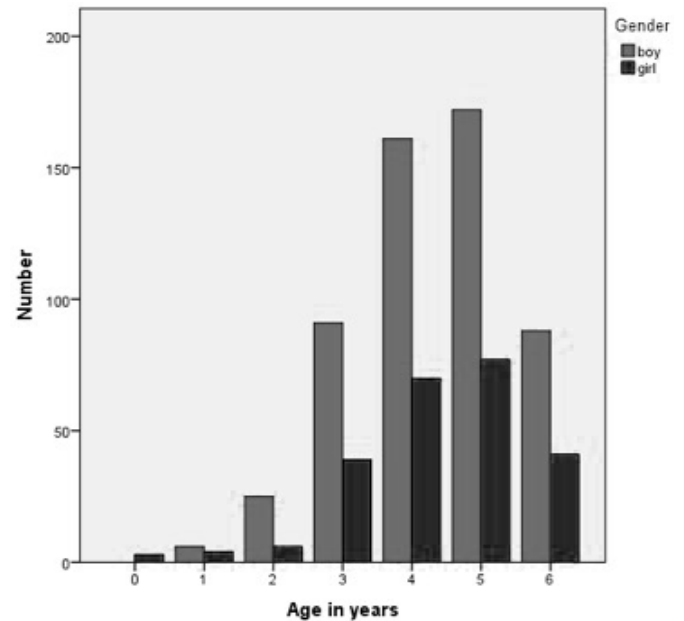


Figure 1: Age of referral for boys and girls.

Table 1: Results of Child Factors and Developmental Milestones.

		Total	Boys	Girls
Type of daycare	Preschool	145 (21%)	93 (19%)	52 (25%)
	Medical daycare	53 (8%)	45 (9%)	8 (4%)
	Elementary school	436 (64%)	304 (63%)	132 (65%)
	Special elementary school	31 (4%)	27 (6%)	4 (2%)
	Child day center	7 (1%)	5 (1%)	2 (1%)
	No daycare	14 (2%)	8 (2%)	6 (3%)
Birth weight (grams)	Mean	3367.56 (N = 580)	3407.32 (N = 416)	3266.7 (N = 164)
	SD	678.71	667.31	698.75
Age of sitting (months)	Mean	7.51 (N = 413)	7.47 (N = 301)	7.62 (N = 112)
	SD	2.39	2.39	2.45
Age of crawling (months)	Mean	9 (N = 363)	8.86 (N = 272)	9.42 (N = 91)
	SD	2.41	2.2	2.9
Age of standing (months)	Mean	9.91 (N = 62)	10.13 (N = 48)	9.18 (N = 14)
	SD	2.9	2.97	2.58
Age of walking (months)	Mean	14.49 (N = 569)	14.13 (N = 405)	15.38 (N = 164)
	SD	3.68	3.25	4.46
Age of first words (months)	Mean	13 (N = 279)	13.22 (N = 206)	12.38 (N = 73)
	SD	5.86	6.39	3.97
Age of day bladder control (months)	Mean	36.05 (N = 393)	36.51 (N = 272)	35.04 (N = 121)
	SD	7.89	7.57	8.5
Age of night bladder control (months)	Mean	38.89 (N = 285)	38.94 (N = 196)	38.77 (N = 89)
	SD	8.83	8.74	9.06
Age of day bowel control (months)	Mean	36.33 (N = 370)	36.89 (N = 257)	35.07 (N = 113)
	SD	7.86	7.42	8.69
Age of night bowel control (months)	Mean	39.01 (N = 274)	39.24 (N = 189)	38.5 (N = 85)
	SD	8.73	8.44	9.39

elementary school, girls in preschool. Mean birth weight was 3367.56 grams. A significant difference was found for gender ($t = 2.26, p .02$); boys are heavier at birth. For most developmental milestones, no significant difference for gender was found. The distribution of the age at which the children reach the milestones is the same across the categories boys and girls (sitting $t = -.54, p .59$; crawling $t = -1.69, p .09$; first words $t = 1.31, p .19$; day bladder control $t = 1.71, p .09$; night bladder control $t = .15, p .88$; day bowel control $t = 1.94, p .05$; night bowel control $t = .65, p .52$). For standing a Mann Whitney test was calculated instead

of the t-test, because of the low frequency of data for girls. No significant difference was found ($\text{sig} .30$), the distribution of standing is the same across the categories boys and girls. Only for walking a significant difference was found for gender ($t = -3.26, p .00$); boys walk at a younger age than girls.

Results of the family factors can be found in Table 2. Mean duration of pregnancy was 39.14 weeks with no difference in distribution across the categories boys ($N = 393$) and girls ($N = 149$) ($t = -.09, p .93$). Most parents were between 30 and 40 years of age. The distribution of the age of the parents is the same

Table 2: Results of Family Factors.

	Total	Boys	Girls	
Age in years biological father	<30	59 (9%)	44 (10%)	15 (8%)
	30-39	373 (58%)	267 (58%)	106 (57%)
	40-49	189 (29%)	128 (28%)	61 (33%)
	50-59	20 (3%)	16 (4%)	4 (2%)
	60-69	2 (<1%)	2 (<1%)	0 (0%)
	Total	643	457	186
Age in years biological mother	<30	162 (23%)	114 (23%)	48 (22%)
	30-39	451 (63%)	315 (63%)	136 (64%)
	40-49	100 (14%)	70 (14%)	30 (14%)
	50-59	0 (0%)	0 (0%)	0 (0%)
	60-69	0 (0%)	0 (0%)	0 (0%)
	Total	713	499	214
Parental education biological father	Primary school	6 (2%)	5 (2%)	1 (1%)
	Special primary education	2 (1%)	1 (<1%)	1 (1%)
	Special higher education	1 (<1%)	1 (<1%)	0 (0%)
	Special needs education	5 (1%)	2 (1%)	3 (3%)
	Vocational education	67 (19%)	54 (23%)	13 (11%)
	Pre-vocational secondary education	43 (12%)	30 (13%)	13 (11%)
	Senior general secondary education	11 (3%)	8 (3%)	3 (3%)
	University preparatory education	1 (<1%)	1 (<1%)	0 (0%)
	Intermediate vocational education	117 (33%)	79 (33%)	38 (33%)
	Applied sciences	75 (21%)	46 (19%)	29 (25%)
	University	24 (7%)	11 (5%)	13 (11%)
	Total	352	238	114
Parental education biological mother	Primary school	5 (1%)	4 (1%)	1 (1%)
	Special primary education	5 (1%)	2 (<1%)	3 (2%)
	Special higher education	1 (<1%)	1 (<1%)	0 (0%)
	Special needs education	1 (<1%)	0 (0%)	1 (1%)
	Vocational education	41 (10%)	29 (11%)	12 (9%)
	Pre-vocational secondary education	78 (19%)	54 (20%)	24 (18%)
	Senior general secondary education	16 (4%)	13 (5%)	3 (2%)
	University preparatory education	1 (<1%)	1 (<1%)	0 (0%)
	Intermediate vocational education	153 (38%)	103 (38%)	50 (37%)
	Applied sciences	76 (19%)	46 (17%)	30 (22%)
	University	30 (7%)	20 (7%)	10 (7%)
	Total	407	273	134
Marital status	Married	539 (74%)	376 (74%)	163 (74%)
	Divorced	189 (26%)	133 (26%)	56 (26%)
	Total	728	509	219
Family composition	Original family	485 (68%)	341 (69%)	144 (68%)
	Combined family	94 (13%)	61 (12%)	33 (15%)
	Single parent	106 (15%)	79 (16%)	27 (13%)
	Foster family	10 (1%)	7 (1%)	3 (1%)
	Adoptive family	8 (1%)	6 (1%)	2 (1%)
	Other family member as caretaker	7 (1%)	3 (1%)	4 (2%)
	Total	710	497	213

across the categories boys and girls (biological father $\chi^2 = 3.02$, $p .56$; biological mother $\chi^2 = .02$, $p .99$). Most biological parents attended intermediate vocational education. The majority of children grew up in a family with both biological parents in their original family followed by growing up in a single parent family. The distribution of marital status of biological parents and family composition is the same across the categories boys and girls (marital status $\chi^2 = .03$, $p .88$; family composition Fisher Freeman Halton 4.79, exact sig .44). For 42.4% of the children (N = 332) it is unknown if they grew up with violence at their homes. Most children of which it is known (57.6%, N = 451) grew up in a family without home violence, both boys and girls ($\chi^2 = .97$, $p .62$).

Results of the (clinical) outcome measures can be found in Table 3. For twelve infants, the duration of treatment was 0 months. Their parents decided not to continue treatment, or they were referred to another organization after intake at Virence Mental Health Care. Mean duration of treatment was about a year and a half (20.34 months, SD 18.87). For five infants, the duration of treatment was above 100 months (more than 8 years). A significant difference was found for gender ($t = 3.25$, $p .00$); duration of treatment for girls (mean duration 16.89 months, SD 13.16) was shorter than for boys (mean duration 21.86 months, SD 20.74). Mean IQ scores were found, without significant differences for boys and girls (VIQ $t = .02$, $p .98$; PIQ $t = -.99$,

Table 3: Results of (clinical) outcome measures.

		Total	Boys	Girls
Psychiatric disorder in family	No	347 (59%)	245 (59%)	102 (58%)
	Mother	81 (14%)	58 (14%)	23 (13%)
	Father	47 (8%)	29 (7%)	18 (10%)
	Siblings	63 (11%)	45 (11%)	18 (10%)
	Both parents	16 (3%)	14 (3%)	2 (1%)
	Parents and siblings	35 (6%)	23 (6%)	12 (7%)
	Total	589	414	175
Psychiatric disorder Mother	ADHD/ADD	30 (5%)	24 (6%)	6 (3%)
	ASS	3 (1%)	1 (2%)	2 (1%)
	Mood disorder	66 (11%)	45 (11%)	21 (12%)
	Learning disability	8 (1%)	6 (1%)	2 (1%)
	Others	18 (3%)	16 (4%)	2 (1%)
	None	464 (79%)	322 (78%)	142 (81%)
	Total	589	414	175
Psychiatric disorder Father	ADHD/ADD	22 (4%)	15 (4%)	7 (4%)
	ASS	12 (2%)	7 (2%)	5 (3%)
	Mood disorder	18 (3%)	14 (3%)	4 (2%)
	Learning disability	10 (2%)	6 (1%)	4 (2%)
	Others	15 (3%)	10 (2%)	5 (3%)
	None	512 (87%)	362 (87%)	150 (86%)
	Total	589	414	175
Psychiatric disorder Siblings	ADHD/ADD	40 (7%)	25 (6%)	15 (9%)
	ASS	32 (5%)	23 (6%)	9 (5%)
	Mood disorder	3 (1%)	3 (1%)	0 (0%)
	Learning disability	4 (1%)	2 (0%)	2 (1%)
	Others	15 (3%)	11 (3%)	4 (2%)
	None	495 (84%)	350 (85%)	145 (83%)
	Total	589	414	175
Psychiatric disorder Infant	ADHD/behavioral disorder	123 (17%)	100 (20%)	23 (12%)
	Autism spectrum disorder*	120 (17%)	93 (18%)	27 (14%)
	Reactive attachment disorder*	25 (4%)	16 (3%)	9 (5%)
	Relational problems* / Parent-infant relationship disorder†	66 (9%)	43 (8%)	23 (12%)
	Regulation disorders of sensory processing†	33 (5%)	23 (5%)	10 (5%)
	Adjustment disorder*†	27 (4%)	15 (3%)	12 (6%)
	Communication disorder*	24 (3%)	20 (4%)	4 (2%)
	Disorder of Infancy NOS*	174 (25%)	128 (25%)	46 (23%)
	Anxiety disorder* / Traumatic stress disorder†	48 (7%)	32 (6%)	16 (8%)
	Developmental coordination disorder*	13 (2%)	9 (2%)	4 (2%)
	Selective mutism*	9 (1%)	3 (1%)	6 (3%)
	Disorders of relating and communicating†	13 (2%)	10 (2%)	3 (2%)
	Mood disorder* / Affective disorder†	13 (2%)	6 (1%)	7 (4%)
	Other	16 (2%)	9 (2%)	7 (4%)
	Total	704	507	197

p .32; TIQ $t = -.77$, $p .44$). Regarding conduct problems of the child, most infants scored normal on the subscales anxious/depressed, somatic complaints, withdrawn, sleep problems, attention problems and aggressive behavior. An equal number of children scored normal or clinical for the subscale emotionally reactive. For the total problem scales (total, internalizing and externalizing) a clinical score was scored most. For the DSM scale autism spectrum problems, most children scored clinical. The distributions of the scores on the subscales emotionally reactive ($\chi^2 .01$, $p .99$), somatic complaints ($\chi^2 1.52$, $p .47$), withdrawn ($\chi^2 = .54$, $p .76$), sleep problems ($\chi^2 1.50$, $p .47$) and aggressive behavior ($\chi^2 4.13$, $p .13$) were the same across the categories boys and girls. A significant difference was found for anxious/depressed ($\chi^2 13.75$, $p .00$) and attention problems ($\chi^2 7.852$, $p .02$); girls are overrepresented in the categories subclinical and clinical for the subscale anxious/depressed and boys are overrepresented in the categories subclinical and clinical for the subscale attention problems. Regarding the total scores, the distribution of the total problems ($\chi^2 2.70$, $p .26$) and internalizing problems ($\chi^2 .25$, $p .88$) were the same across the categories boys and girls. The scale externalizing problems did show a significant gender difference ($\chi^2 13.11$, $p .00$); boys are overrepresented in the categories subclinical and clinical. Finally, the distribution of the DSM scales affective problems ($\chi^2 1.48$, $p .48$), autism spectrum problems ($\chi^2 1.12$, $p .57$), attention deficit/hyperactivity problems ($\chi^2 3.68$, $p .16$), and oppositional defiant problems ($\chi^2 4.28$, $p .12$) was the same across the categories boys and girls. The DSM scale anxiety problems did show a significant gender difference ($\chi^2 10.72$, $p .01$); behavior of girls is scored more often in the category clinical than behavior of boys. Familial psychiatric disorders were reported in 242 families (41%), no gender difference was found for presence of familial psychiatric disorder ($\chi^2 4.40$, $p .49$). For mothers, mood disorders were reported most, for fathers and siblings, ADHD. The distribution of psychiatric disorders for mothers, fathers and siblings was the same across the categories boys and girls (mothers Fisher Freeman Halton 6.58, exact sig .23; fathers Fisher Freeman Halton 2.34, exact sig .81; siblings Fisher Freeman Halton 3.12, exact sig .69). In total 704 psychiatric disorders were reported for the infants. For some infants ($N = 193$) no diagnoses were reported in their files, others ($N = 124$) received more than one. Most reported diagnoses were ADHD/behavioral disorders, ASS and disorder in infancy/childhood NOS. A significant gender difference was found ($\chi^2 28.70$, $p .01$); boys seem to receive more than girls the diagnoses ADHD/behavioral disorders and ASS.

Discussion

This is the second largest descriptive study of an infant mental health clinical sample focusing on psychiatric diagnosis and the first looking at socio-demographic characteristics. The results of this descriptive study show that more boys than girls were referred to IMH services. Sixty-nine percent (69%) of the referred infants in this sample are males. This matches data from earlier clinical sample studies [29,49-72,77-79], in which the percentage of males are approximately around 60%

(varying from 46 to 84 %). Age of referral was most frequently at four or five years of age, both for boys and girls, showing a presumable underrepresentation of infants under three years of age. Though Luby and Morgan [55] report 62% of infants under three years of age and Keren, et al. [70] report a quite even distribution of age at referral along the first three years of life in their study, in several studies [49,51,61,63,69], the same trend of later referral is observed. Cordeiro, et al. [69] discuss that the increase of referrals during the third year of life may originate in a possible lack of sensitivity of health professionals to infant mental health problems as well as a lack of parental motivation to attend psychiatric services for babies. Several authors [55,63] hypothesize that disruptive behavior, tantrums and aggression, increasing with age [56], most often prompt referral to infant mental health, implicating that a large portion of psychiatric disorders under the age of three still go unrecognized. Wilens, et al. [61] report that in their sample the onset of psychopathology proceeded the age at referral by over 2 years, amounting for an enormous timespan in early infant development. This is alarming, since early referral and intervention is crucial in infant mental health. Dunitz, et al. [29] even state that by the age of 3, the time of optimal therapeutic leverage may have passed. This underlines the need for early screening, assessment and referral when there are concerns about the pregnancy or the infant and parent(s) in the first years. It also puts emphasis on the importance that health professionals are familiar with infant mental health so they can refer when necessary.

Most biological parents were between 30 and 40 years of age, which matches data from previous smaller studies [55,58,62,66,68]. Parent education levels were documented for almost half of the cases (45%). Most biological parents attended intermediate vocational education. This matches data of two studies by Keren, et al. [58,70]. Looking at earlier research the most common categorization used for parent education levels is (1) primary school, (2) secondary school and (3) college/university. To evaluate the data of this study against these categories, the following education levels were combined: (1) primary school, (2) vocational education – pre-vocational secondary education – senior general secondary education – university preparatory education – intermediate vocational education, (3) applied sciences education – university. A noticeable trend in this study, is that most parents fall into the second category (approximately 70%), which is in line with the findings of Maldonado-Durán [63] (60% in the second category) and shows a more pronounced effect than the findings of Thomas & Clark [56] (53% in the second category). In a recent study of Coskun, et al. [68], the majority of parents are in category one (approximately 45%).

The most common family composition in this sample is children living with both biological parents in their original family. Children living in a single parent family, is the second most common family composition. These two are also the most frequently found family compositions in data from six previous studies [29,49,52,55,62,67]. However, four previous studies [50,51,57,63] show a higher prevalence of single parent families and foster homes as family compositions. The most presumable

explanation is that this reflects referral biases and the (historical) specialization of these institution. For 42.2% of the children in our study it is unknown if they grew up with violence at their homes. Most children of which it is known (N= 451) grew up in a family without home violence, both boys and girls. There is no previous study providing data on home violence in an infant mental health clinical sample. Considering the unquestionably adverse effects of violence on neurobiological development and psychological and social functioning [80], the clinical assessment of possible experiences of violence is indispensable in infant mental health clinical practice and further research in this area is necessary.

Mean duration of treatment (18 months) was shorter for girls than for boys. In international literature, not many studies provide data on duration of treatment. Viaux-Savelon, et al. [67] reports that in 90% of the cases, the duration of treatment was less than one year, though this study only included infants <12 months, so comparison is difficult. According to data from a Dutch national mental health consumption report in 2012 [81], the average duration of treatment for children (0-18 years) was 23 months.

Regarding CBCL scores, most children scored clinical for the syndrome scales Internalizing, Externalizing and Total. Girls more often score subclinical and clinical for the subscale Anxious/Depressed and boys for the subscale Attention Problems and for the syndrome scale Externalizing Problems. The DSM scale Anxiety Problems showed a significant gender difference; behavior in girls is scored more often in the category clinical than behavior of boys. Few studies investigate gender effects in infant psychopathology. Rescorla, et al. [82] report a significant gender effect for the syndrome scale Externalizing Problems, with boys scoring higher than girls, which is in line with the trend in this study. In the study of Equit, et al. [71], disruptive behavior disorders were more common in boys, internalizing disorders in girls. A recent study by Alakortes et al. [83] looks at correspondence between maternal and paternal CBCL ratings and shows that mothers are prone to rate their children, and specially boys for externalizing problems, higher than fathers on the CBCL. This shows the importance of gathering information from both parents in clinical practice and calls for distinguishing between mother and father reports in further research.

Psychiatric disorders were reported in 242 families (41%). In 16% of the cases there was a sibling psychiatric diagnosis reported, ADHD being the most prevalent (7%), which falls within range of normal prevalence rates of mental health disorders in a population under 18 years of age [84]. However, this appears to be the first study looking at sibling psychiatric diagnosis in an infant mental health clinical population. Looking at mental health research focusing on children < 18 years, the vast majority of research examines the parent-child transmission, largely neglecting siblings of children with mental health problems [85] Ma, et al. [85] report in their systematic review of siblings of children with mental health problems, that

siblings are at high risk for a range of psychopathology. Even though this high risk is not evidently reflected in the data of this study, further research is necessary and in clinical practice the siblings of patients must not be forgotten.

Twenty-one percent (21%) of the mothers and 13% of the fathers had a psychiatric disorder, mood disorders and ADHD being most prevalent respectively. In previous studies [52,55,58,62,70] parental psychopathology in infant mental health clinical samples ranges from 21.8% to 71.8%. None of these studies further specify into psychiatric diagnosis, rendering further comparison difficult. It is widely known that there is strong evidence for trans-generational transmission of mental disorders, posing children of parents with a mental disorder at a higher life-time risk (between 41 and 77%) of developing psychiatric disorders [86-88]. The largest impact of parental psychopathology occurs during the first years of the child's life, including the pregnancy period [86]. This transgenerational transmission is significantly mediated by the parent-child interaction [89], offering a unique window for early IMH related interventions. This underlines the importance of early screening and adequate referral in case of parental psychopathology.

In this study, 75% of the infants received at least one psychiatric diagnosis and for 16%, there was more than one diagnosis. Most reported diagnoses were ADHD/behavioral disorders (17%), ASS (17%) and Disorder in infancy/childhood NOS (25%). Due to heterogeneity among clinical studies so far, the distribution of psychiatric diagnoses of infants varies widely in these studies. Prevalence of ADHD ranges from 7% to 86%, of ODD from 10% to 61% and of ASS/PDD from 3.5% to 27.9% [54,56,59,61,64,68,71,79]. This presumably relates to a variety of factors such as age of children, referral biases, specialization of institution and use of different diagnostic classification systems. It is notable that in this study one fourth of the diagnoses fall into the category Disorder in infancy/childhood NOS. The only previous study mentioning this category, is the study by Luby and Morgan [55] with a prevalence of 8%. The high prevalence of cases within this category, and the overall high prevalence of DSM-IV-TR diagnoses versus DC: 0-3, is possibly related to introduction of the DC: 0-3R in 2009, late during the inclusion period of this study from 2000 to 2013, showing the limitations of the DSM-IV-TR in providing adequately describing psychiatric diagnoses for this young age group. Also, the higher ages at referral, at 4 or 5 years, may cause that the DSM-IV diagnoses are more prevalent.

Strengths and Limitations

This is the second largest descriptive study looking at psychiatric diagnoses and socio- demographic characteristics in an infant mental health clinical sample. The sample of 783 infants < 6 years were consecutively included from three locations of an infant mental health team, of which all the paper and digital files were assessed with access to all files during multiple years. Limitations of this study, are the unavoidable loss of data in the process of merging patient files into categories and the retrospective nature of the study. Another limitation is that

introduction of the second edition of the DC: 0-347 in clinical practice only occurred in 2009, so the prevalence of DC: 0-3 specific diagnoses may not be representative in this sample. In the meantime, the third edition, DC: 0-534, has been published.

Conclusion and Future Implications

In conclusion, infants are mostly referred to the infant mental health teams at four or five years of age, implicating that a large portion of psychiatric disorders under the age of three still go unrecognized. This underlines the need for early screening, assessment and referral when there are concerns about the pregnancy or the infant and parent(s) in the first years. It also emphasizes the importance of health professionals working with young children being familiar with infant mental health. The very recent introduction of the DC: 0-5 may further facilitate the clinical practice and investigation into this age group. The prevalence rate of familial psychiatric disorders is high in this sample, emphasizing the importance of screening and when necessary further assessing family members, siblings included, of infant mental health patients.

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