

Kinder- und Jugendpsychiatrie in Deutschland – das Beispiel ADHS

Daten zur Diskussion über die Zukunft der ambulanten fachärztlichen Versorgung

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Würzburg (Veitshöchheim), 17.-19. November 2005

BACKGROUND

Institutional Background

- Institute for Innovation & Valuation in Health Care (**INNOVAL^{HC}**) e.V.
 - Founded in **Aschaffenburg**/Germany in June 2005
 - Formally associated with the **University of Applied Economic Sciences Ludwigshafen**
 - **Independent Not-For-Profit Research Organization** (Not a Commercial Contract Research Organization)
 - **Funding** of Research Projects
 - Accepted under an “unrestricted educational grant” policy only
 - Receiving support from National Institutes of Mental Health (NIMH, Bethesda, Md.), Physician and Payer Organizations (~80% international projects – USA, Canada, United Kingdom, Sweden, Netherlands)
- Chairman: Prof. Dr. med. **Michael Schlander**, M.B.A. (Ludwigshafen)
- Vice-Chairman: Prof. Dr. rer. pol. **Oliver Schwarz** (Mannheim)

BACKGROUND

Personal

- ▭ **Institute for Innovation & Valuation in Health Care**
 - ▭ Founder and Chairman of INNOVAL^{HC}, since 2005
- ▭ **University of Duisburg / Essen**
 - ▭ Scientific Steering Committee "Pharmaceutical Medicine" & Member of Medical Faculty, since 2005
 - ▭ Previously at University of Witten/Herdecke (1996-2005)
- ▭ **Hochschule für Wirtschaft Ludwigshafen**
 - ▭ Professor of Management, since 2002
- ▭ **Pharmaceutical Industry**
 - ▭ General Management (Germany) 1999-2002
 - ▭ Strategic Marketing & Sales (in USA, Belgium, and Germany) 1993-1999
 - ▭ European New Product Development 1987-1993
- ▭ **Experimental Brain Research**
 - ▭ Academia (University of Frankfurt a.M.) 1982-1987
- ▭ **Diploma in Health Economics**
 - ▭ Stockholm School of Economics (2002)
- ▭ **Master of Business Administration (M.B.A.)**
 - ▭ City U of Bellevue/Washington, Valedictorian of the class of 1994
- ▭ **M.D. (Dr. med.)**
 - ▭ University of Frankfurt am Main, summa cum laude (1985/87)



OUTLINE

Agenda

- ▭ Some Introductory Remarks
- ▭ The Nordbaden Project
 - ▭ Database Characteristics
- ▭ Prevalence of ADHD in Nordbaden
 - ▭ Physician Groups Involved in Care
 - ▭ Physicians Involved in Care
- ▭ Discussion
 - ▭ Further Research Needs
 - ▭ Implications for Policy Makers



INTRODUCTION

The Disorder

Attention-Deficit/Hyperactivity Disorder (ADHD)



Source: www.sagen.at

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INTRODUCTION

The Disorder

Diagnostic Criteria



“ADHD” (DSM-IV)

- ↪ **Inattention**
 - ↪ $\geq 6/9$ symptoms
- and / or*
- ↪ **Hyperactivity and impulsivity**
 - ↪ $\geq 6/9$ symptoms
- ↪ **Symptoms** causing impairment
 - ↪ Have persisted for ≥ 6 months
 - ↪ Are present **before 7 years** of age
 - ↪ Are “pervasive”, i.e., present in ≥ 2 **settings** (e.g., home, school, work)
 - ↪ Are not better accounted for by another mental disorder

“HK[C]D” (ICD-10)

- ↪ **Inattention** ($\geq 6/9$ symptoms)
- and*
- ↪ **Hyperactivity** ($\geq 3/5$ symptoms)
- and*
- ↪ **Impulsivity** ($\geq 1/4$ symptoms)
- ↪ **Symptoms** criteria like DSM-IV
- ↪ **Hyperkinetic Disorder:**
 - ↪ If criteria above are met (-> F90.0)
- ↪ **Hyperkinetic Conduct Disorder:**
 - ↪ If additional symptoms of conduct disorder are present (-> F90.1)

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INTRODUCTION

The Disorder

Other Disorders with Overlapping Symptoms¹

- ↪ Learning Disorders
- ↪ Oppositional Defiant Disorder
- ↪ Conduct Disorder
- ↪ Anxiety,
Obsessive-Compulsive Disorder (OCD),
Post-Traumatic Stress Disorder
- ↪ Depression
- ↪ Bipolar Disorder
- ↪ Tic Disorder
- ↪ Adjustment Disorder



THE NORDBADEN PROJECT

- ↪ Objectives
- ↪ Database Characteristics

RATIONALE

The Nordbaden ADHD Project

Research Objectives¹

- ↪ **“Real World” Prevalence of ADHD**
 - ↪ Administrative prevalence rate by age, gender, and severity
 - ↪ Physician groups (specialties) involved in patient care
- ↪ **Co-Existing Conditions**
- ↪ **Treatment Patterns**
 - ↪ Quality of care compared with existing guidelines
- ↪ **Direct Medical Costs Attributable to ADHD**
 - ↪ Perspective of the Statutory Health Insurance
 - ↪ Types of cost (physicians, medication, psychotherapy, etc.)
- ↪ **Baseline for Future Health Care Utilization Research**

¹cf. Study Protocol (“Projektbeschreibung”), Ludwigshafen, September 2004



METHODS

The Nordbaden ADHD Project

Project Design¹

- ↪ **Retrospective Database Analysis**
- ↪ **Case Control Technique**
 - ↪ Matched pairs (by age, gender, type of health insurance)
 - ↪ For examination of co-morbidity, utilization, and costs
- ↪ **Cross-Sectional Study**
 - ↪ Integrating patient-related data from four quarters of 2003
- ↪ **Study Protocol**
 - ↪ Including prospectively defined Data Analysis Plan
- ↪ **Data Transfer Protocol**
 - ↪ Detailed description of procedures for data transfer
 - ↪ Approval by KVN Data Protection Officer

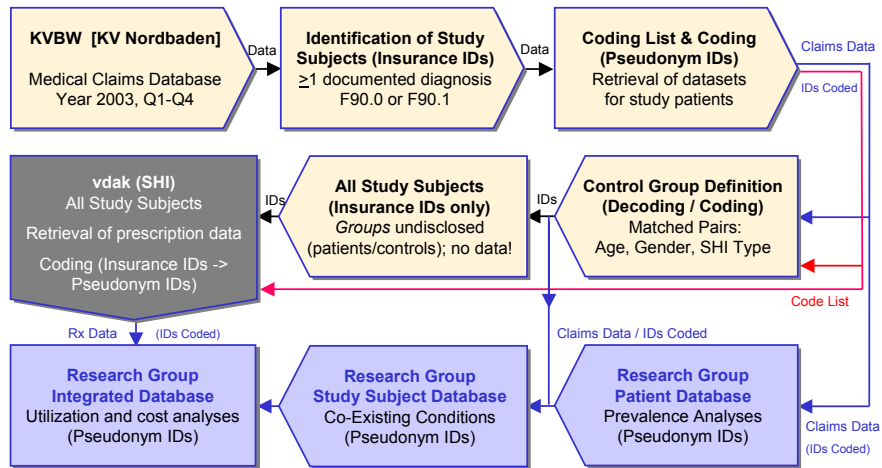
¹cf. Study Protocol (“Projektbeschreibung”),
Ludwigshafen, September 2004



METHODS

The Nordbaden ADHD Project

Data Flow & Integration¹



¹cf. Study Data Transfer Protocol

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METHODS

Database Characteristics

The Nordbaden Database

Population

- 2.238m persons covered by Statutory Health Insurance
- Full coverage of the regional SHI insured population
- Representing 82% of the total population in Nordbaden
- Sample representing ~3% of the total population of Germany

Generalizability

- Research Issue:
- (To what extent)
Can we assume the Nordbaden population sample to be representative of the total German population?

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METHODS

Database Characteristics

Sociodemographic Data		
[2003]	Nordbaden	Germany
Population		
Total number	2.723m	82.537m
Insured by SHI ("GKV")	2.238m (82.2%)	70.422m (85.3%)
Of those:		
Male/female ratio	0.88 / 1	0.88 / 1
Age 0-6 years	150,476 (6.7%)	4.470m (6.4%)
Age 7-12 years	141,857 (6.3%)	4.166m (5.9%)
Age 13-19 years	175,663 (7.9%)	5.722m (8.1%)
Age ≥20 years	1.770m (79.1%)	56.064m (79.6%)

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Database Characteristics

Physicians in Private Practice		
[2003]	Nordbaden	Germany
Physicians (g.p.'s & all specialties)		
Total number	4,905	127,711
No. / 100,000 insured persons	219.1	181.4
Practitioners ("APIs")		
Total number	2,102	70,747
No. / 100,000 insured persons	93.9	86.3
Pediatricians		
Total number	211	6,093
No. / 100,000 insured persons	9.3	8.7
Child & Adolescent Psychiatrists		
Total number	30	519
No. / 100,000 insured persons	1.3	0.7

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PREVALENCE OF ADHD IN NORDBADEN

- Prevalence by Age and Gender
- Physician Groups Involved in Care
- Physicians Involved in Care

METHODS

Database Characteristics

Patients Identified (by Diagnostic Subgroups¹)

	Male	Female	Total	Ratio [m/f]
Patients with diagnosis "HKD"	6,048	2,389	8,437	2.5
Patients with diagnosis "HKCD" ¹	2,650	788	3,438	3.4
Total ADHD (HKD and/or HKCD)	8,698	3,177	11,875	2.7

Number of Physicians Involved in ADHD Care

	Number of patients
ADHD reported by one physicians only	9,780
ADHD reported by two physicians	1,764
ADHD reported by more than two physicians	331
Total	11,875
Number of ADHD patients insured by "vdak":	3,831

¹including patients with both diagnoses reported in 2003; algorithm: "HKCD" if ADHD and at least one out of [F90.1, F91.x or F92.x]



PREVALENCE

Overview of Administrative Prevalence

Prevalence of ADHD in Nordbaden 2003						
Age group	Overall		Male		Female	
	%	n	%	n	%	N
0-6 Years	1.26%	1,893	1.72%	1,329	0.77%	564
7-12 Years	4.97%	7,046	7.15%	5,215	2.66%	1,831
13-19 Years	1.31%	2,306	1.99%	1,789	0.60%	517
≥20 Years	0.04%	630	0.04%	345	0.03%	285
Total	0.53%	11,875	0.83%	8,678	0.27%	3,197

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PREVALENCE

Overview of Administrative Prevalence

Prevalence of ADHD in Nordbaden 2003			
Age group	Overall	Male	Female
	n	n	n
20-29 Years	223	148	75
30-39 Years	161	79	82
40-49 Years	136	82	54
>50 Years	110	47	63
Total	630	356	274

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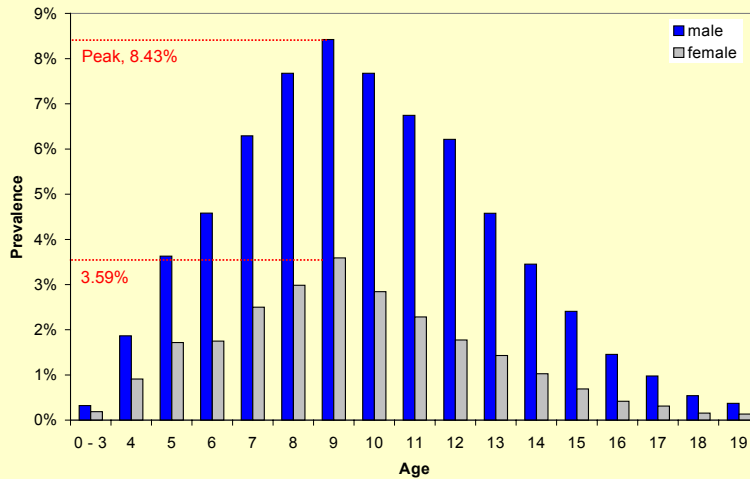
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PREVALENCE

Administrative Prevalence of ADHD in Nordbaden

Prevalence by Gender: Children and Adolescents



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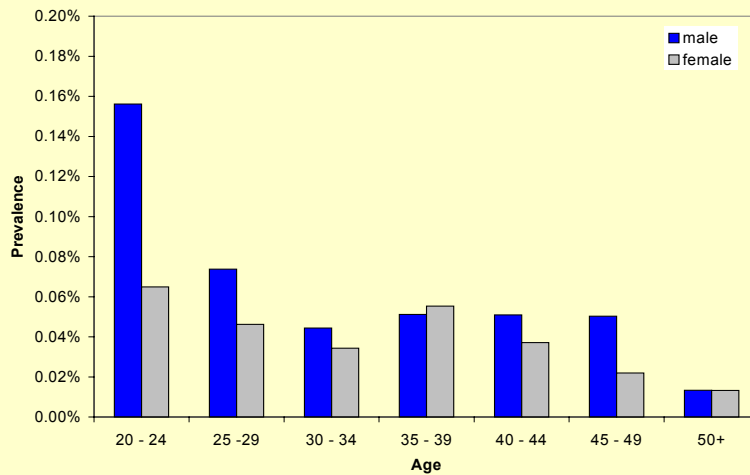
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Administrative Prevalence of ADHD in Nordbaden

Prevalence by Gender: Adults



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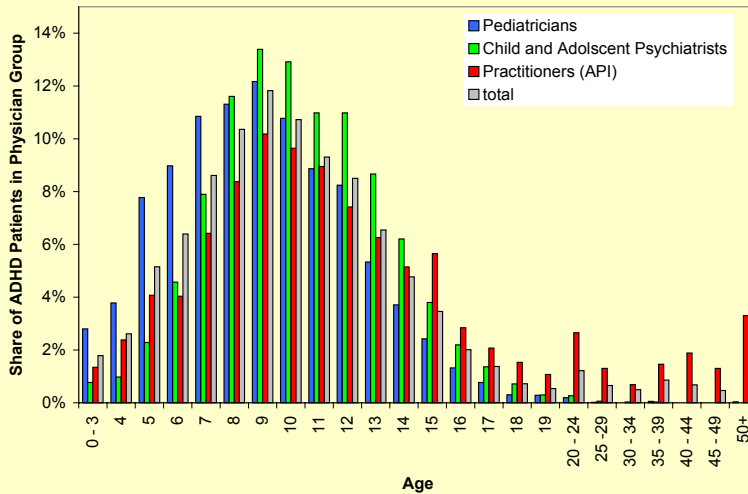
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PREVALENCE

Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Age Profiles of ADHD Patients by Specialist Group¹



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PREVALENCE

Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Subjects with ADHD seen by CAPs or Pediatricians

Age group	Subjects with ADHD	Subjects with ADHD seen in 2003 by Child & Adolesc. Psychiatrist			Subjects with ADHD seen in 2003 by Pediatrician		
[years / gender]	n	n	%	95% CI	n	%	95% CI
0 - 6	1,893	290	15.3%	13.7% - 17.0%	1,308	69.1%	67.0% - 71.2%
hereof: male	1,331	219	16.5%	14.5% - 18.6%	920	69.1%	66.6% - 71.6%
female	562	71	12.6%	10.0% - 15.7%	388	69.0%	65.0% - 72.8%
7 - 12	7,046	2,283	32.4%	31.3% - 33.5%	3,487	49.5%	48.3% - 50.7%
hereof: male	5,220	1,745	33.4%	32.1% - 34.7%	2,546	48.8%	47.4% - 50.1%
female	1,826	538	29.5%	27.4% - 31.6%	941	51.5%	49.2% - 53.8%
13 - 19	2,306	783	34.0%	32.0% - 35.9%	793	34.4%	32.4% - 36.4%
hereof: male	1,791	600	33.5%	31.3% - 35.7%	617	34.5%	32.2% - 36.7%
female	515	183	35.5%	31.4% - 39.8%	176	34.2%	30.1% - 38.5%
20 +	630	13	2.1%	1.1% - 3.5%	17	2.7%	1.6% - 4.3%
hereof: male	356	3	0.8%	0.2% - 2.4%	11	3.1%	1.6% - 5.5%
female	274	10	3.6%	1.8% - 6.7%	6	2.2%	0.8% - 4.7%
total	11,875	3,369	28.4%	27.6% - 29.2%	5,605	47.2%	46.3% - 48.1%
hereof: male	8,698	2,567	29.5%	28.6% - 30.5%	4,094	47.1%	46.0% - 48.1%
female	3,177	802	25.2%	23.7% - 26.8%	1,511	47.6%	45.8% - 49.3%

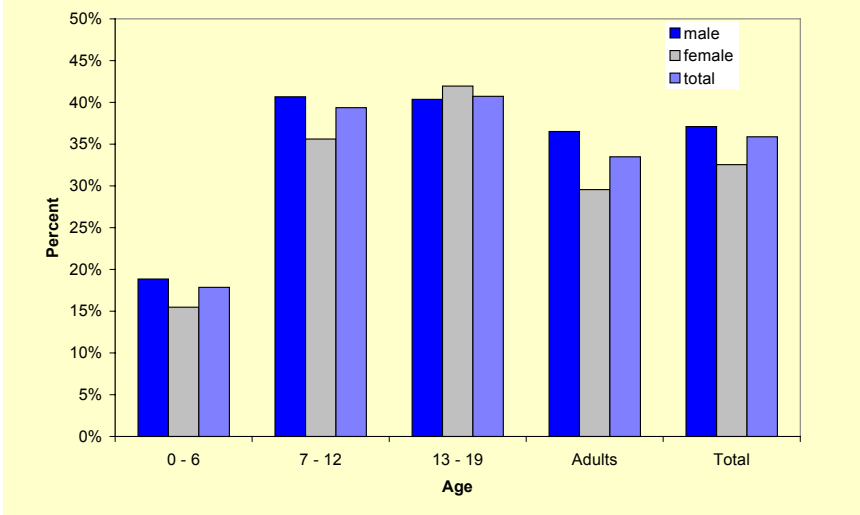
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Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Subjects with ADHD seen at least once in 2003 by a Physician Specialist



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PREVALENCE

Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Subjects with ADHD seen in 2003 by Specialists

Age group	Subjects with ADHD	Subjects with ADHD seen at least once in 2003 by a physician specialist			Subjects with ADHD seen at least four times in 2003 by a physician specialist		
		n	n	%	95% CI	n	%
0 - 6	1,893	338	17.9%	16.2% - 19.7%	97	5.1%	4.2% - 6.2%
hereof:							
male	1,331	251	18.9%	16.8% - 21.1%	70	5.3%	4.1% - 6.6%
female	562	87	15.5%	12.6% - 18.4%	27	4.8%	3.2% - 6.9%
7 - 12	7,046	2,773	39.4%	38.2% - 40.5%	1,049	14.9%	14.0% - 15.7%
hereof:							
male	5,220	2,123	40.7%	39.3% - 42.0%	814	15.6%	14.6% - 16.6%
female	1,826	650	35.6%	33.4% - 37.8%	235	12.9%	11.4% - 14.5%
13 - 19	2,306	939	40.7%	38.7% - 42.8%	314	13.6%	12.2% - 15.1%
hereof:							
male	1,791	723	40.4%	38.1% - 42.7%	241	13.5%	11.9% - 15.1%
female	515	216	41.9%	36.6% - 46.3%	73	14.2%	11.3% - 17.5%
20 +	630	211	33.5%	29.8% - 37.3%	79	12.5%	10.1% - 15.4%
hereof:							
male	356	130	36.5%	31.5% - 41.8%	52	14.6%	11.1% - 18.7%
female	274	81	29.6%	24.2% - 35.3%	27	9.9%	6.6% - 14.0%
total	11,875	4,261	35.9%	35.0% - 36.8%	1,539	13.0%	12.4% - 13.6%
hereof:							
male	8,698	3,227	37.1%	36.1% - 38.1%	1,177	13.5%	12.8% - 14.3%
female	3,177	1,034	32.5%	30.9% - 34.2%	362	11.4%	10.3% - 12.6%

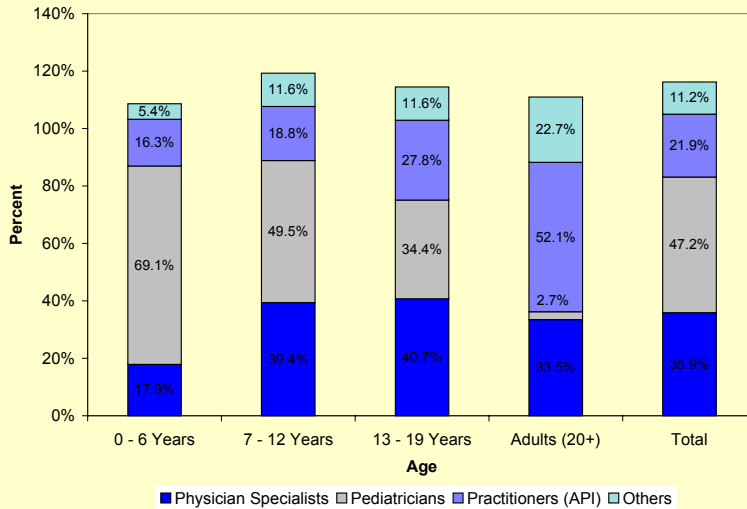
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Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Physician Groups Involved in Care by Age



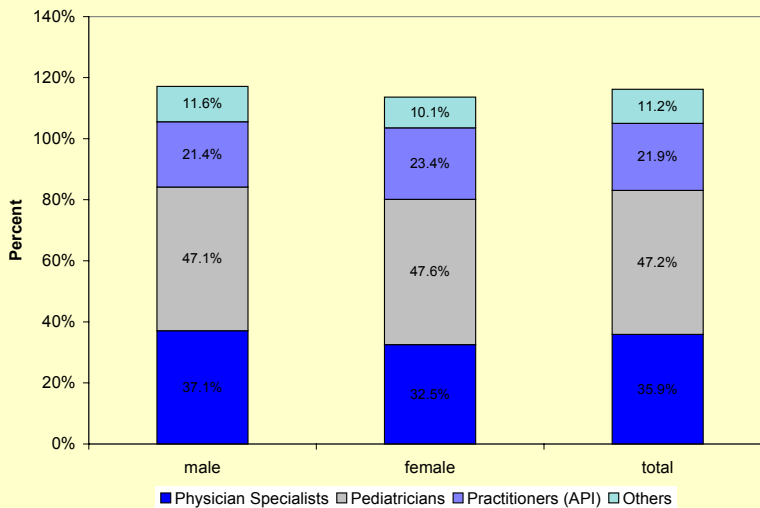
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Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Physician Groups Involved in Care by Gender



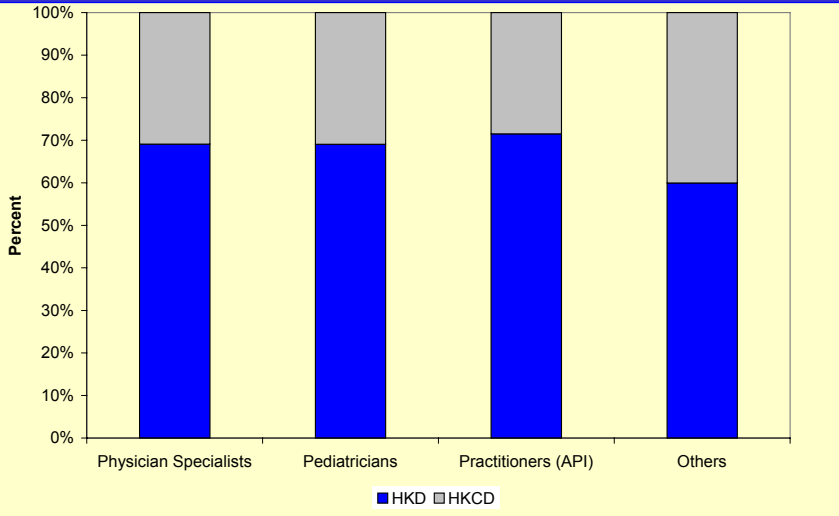
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Specialist Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Proportion of HKD & HKCD (within Physician Groups)



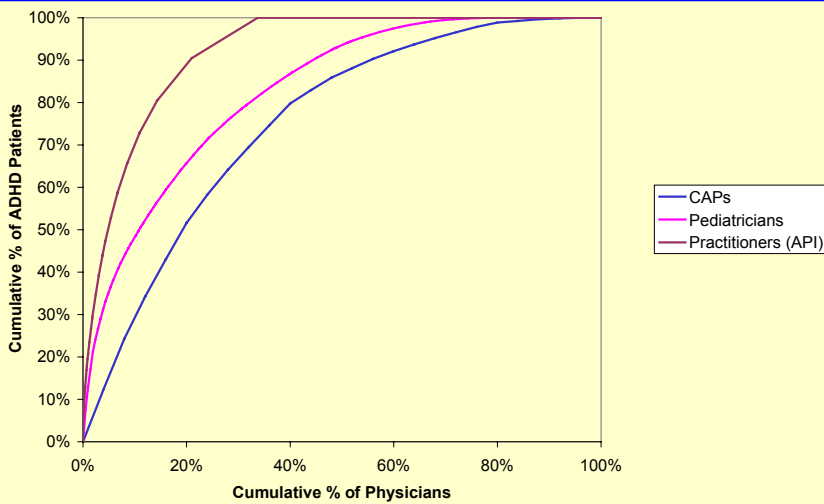
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PREVALENCE

Physician Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Concentration Analysis by Specialist Group



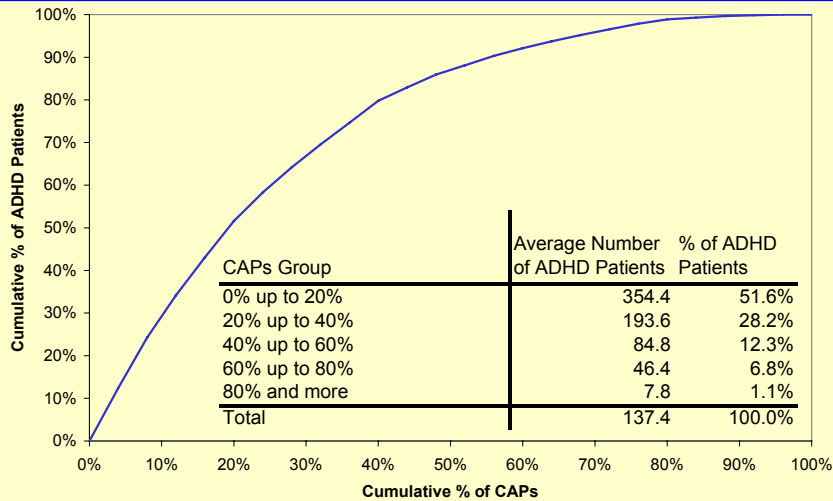
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PREVALENCE

Physician Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Concentration Analysis: CAPs



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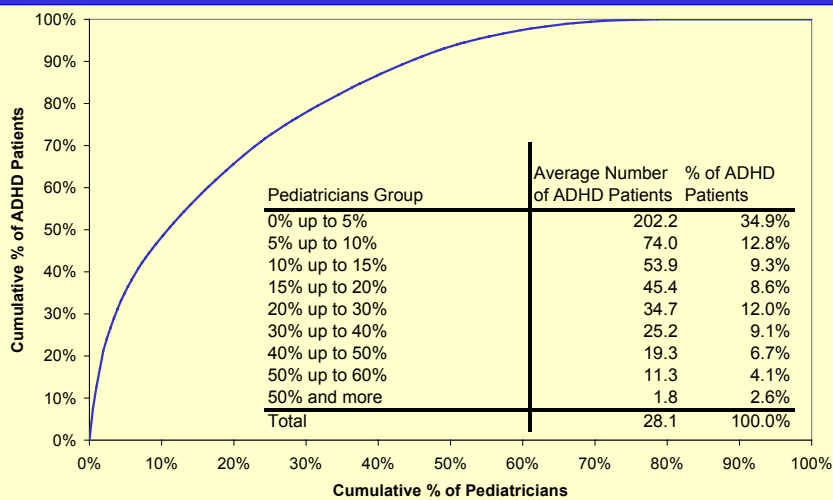
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PREVALENCE

Physician Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Concentration Analysis: Pediatricians



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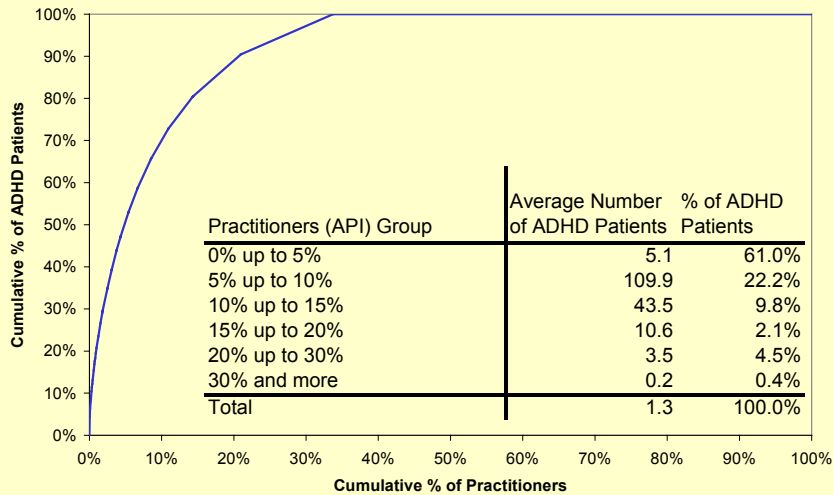
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PREVALENCE

Physician Involvement in Diagnosis and Treatment of ADHD in Nordbaden

Concentration Analysis: Practitioners



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DISCUSSION

- ↪ Further Research Needs
- ↪ Implications for Policy Makers

PREVALENCE

The Nordbaden ADHD Project

Key Observations: Prevalence

Discussion

- High administrative prevalence in children and adolescents compared to "true prevalence" estimates based on ICD-10
- Male-to-female ratio ~3:1 in children and adolescents
- Boys more often diagnosed having co-existing conduct disorder
- Among adults, ADHD was rarely diagnosed (recognized), a finding in striking contrast to reported prevalence in children and adolescents and the results of longitudinal studies indicating persistence of ADHD into adulthood in a substantial number of patients
- Male-to-female ratio in adults (<30 years) ~1:1

Some Suggested Implications

- Quality of diagnosis (and reporting) in routine clinical care?
- Consequences for patients of an ADHD "label"?
- Implications for care (multimodal treatment)?



PREVALENCE

The Nordbaden ADHD Project

Key Observations: Physicians Involved

Discussion

- Most patients (>64%) were not seen (at least once) by a specialist
- A small number of patients (~13%) only were treated by or under continuous supervision of a specialized physician
- For children and adolescents, pediatricians are the most important providers of routine clinical care
- No gender differences re. physician specialist involvement
- No differences re. frequency of co-existing conduct disorder between physician specialist groups
- Diagnosis of ADHD by CAPs is concentrated: 20% (50%) of physicians account for 52% (86%) of diagnoses
- Diagnosis of ADHD by pediatricians is concentrated: 20% (50%) of physicians account for 56% (93%) of diagnoses
- Diagnosis of ADHD by practitioners is highly concentrated: 10% of physicians account for 83.2% of diagnoses (within group)

