HEIDELBERG UNIVERSITY HOSPITAL

Exploiting technology to bridge gaps in mental health services

10/2023 Markus Moessner, Center for Psychotherapy Research

UK HD

Exploiting technology to bridge gaps in mental health services

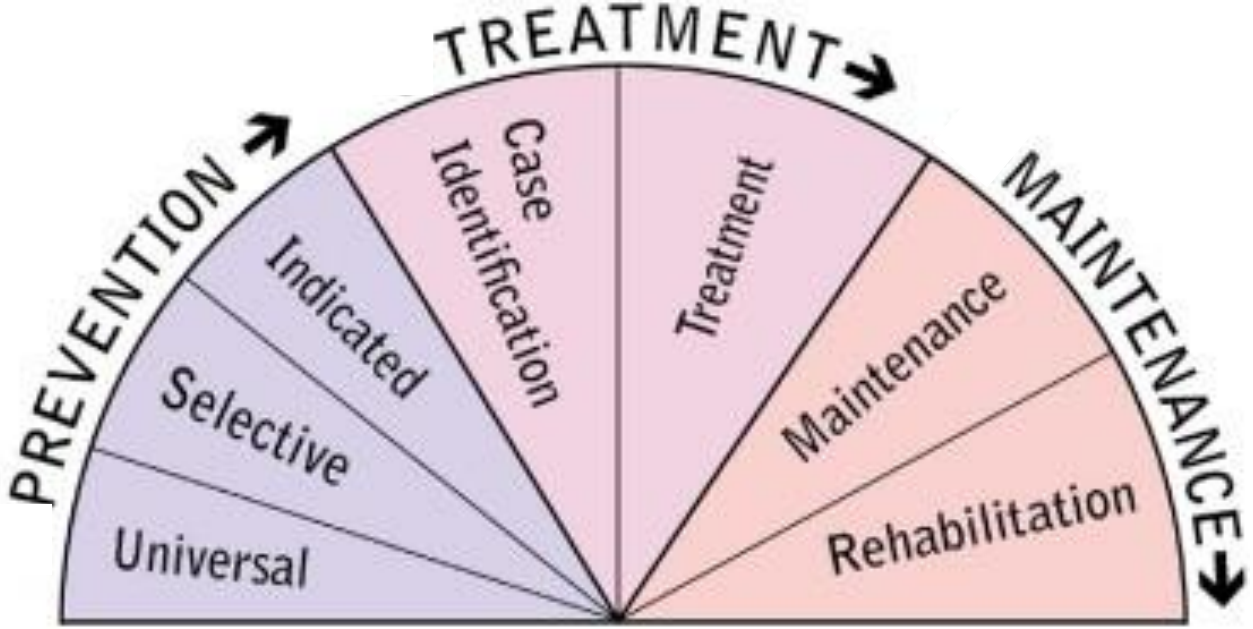
- Introduction
  - Where to start? Which are the most important gaps?
  - Two simulation studies
- Two examples of ICT applications to increase access to professional care
  - ProYouth
    - Dissemination
    - Facilitation of help-seeking
  - Outlook: ProHEAD
- Discussion

Introduction

- Limited impact of mental health services on the overall disease burden
- Despite effective treatments, the overall disease burden (prevalence) has not been reduced significantly over the last decades

- Can technology help to increase the mental health impact of our services?

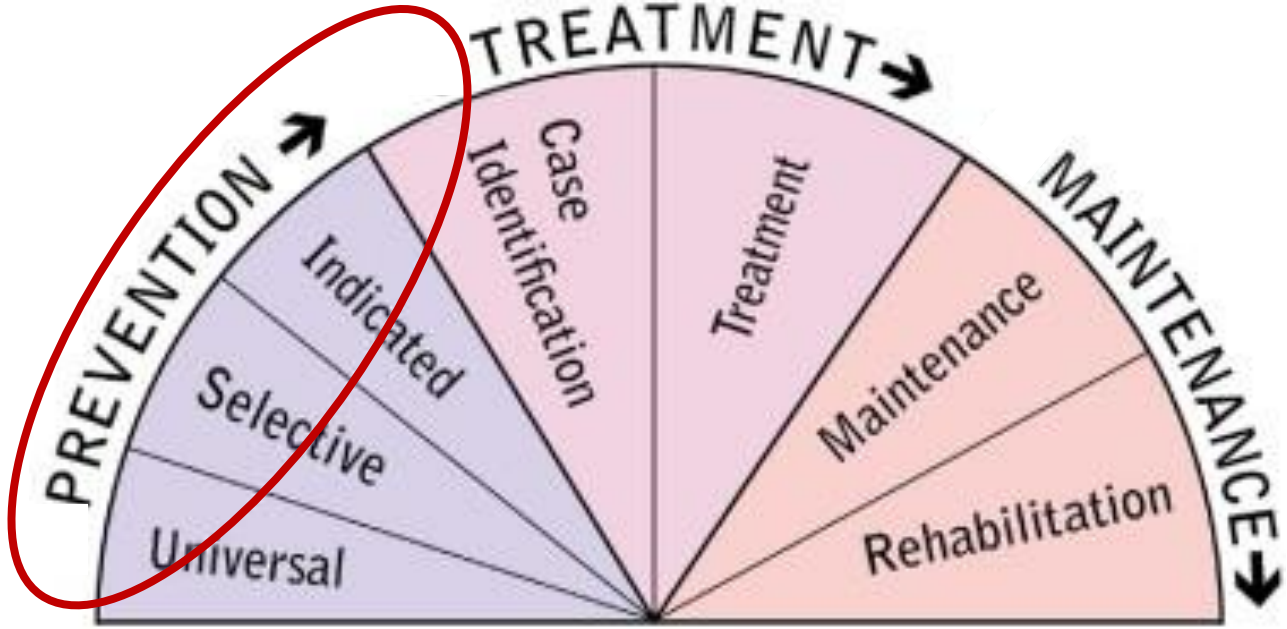
Over the past decade, technology-enhanced interventions have been introduced for all stages of mental healthcare



Institute of Medicine, 2009

Over the past decade, technology-enhanced interventions have been introduced for all stages of mental healthcare

- prevention of illness onset
- early identification of illness onset
- facilitation of transition to treatment



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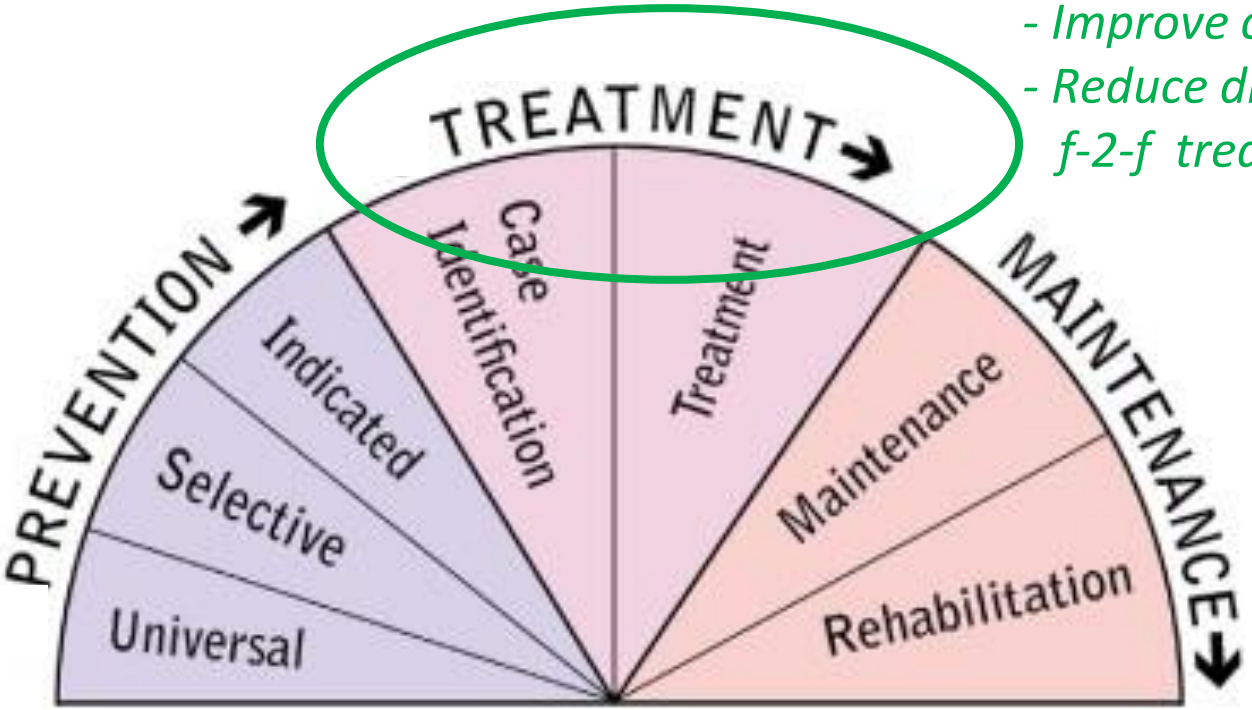
- *Reach underserved populations*
- *Combine with f-2-f treatment*
- *Improve compliance / adherence*
- *Reduce dropout from f-2-f treatment*



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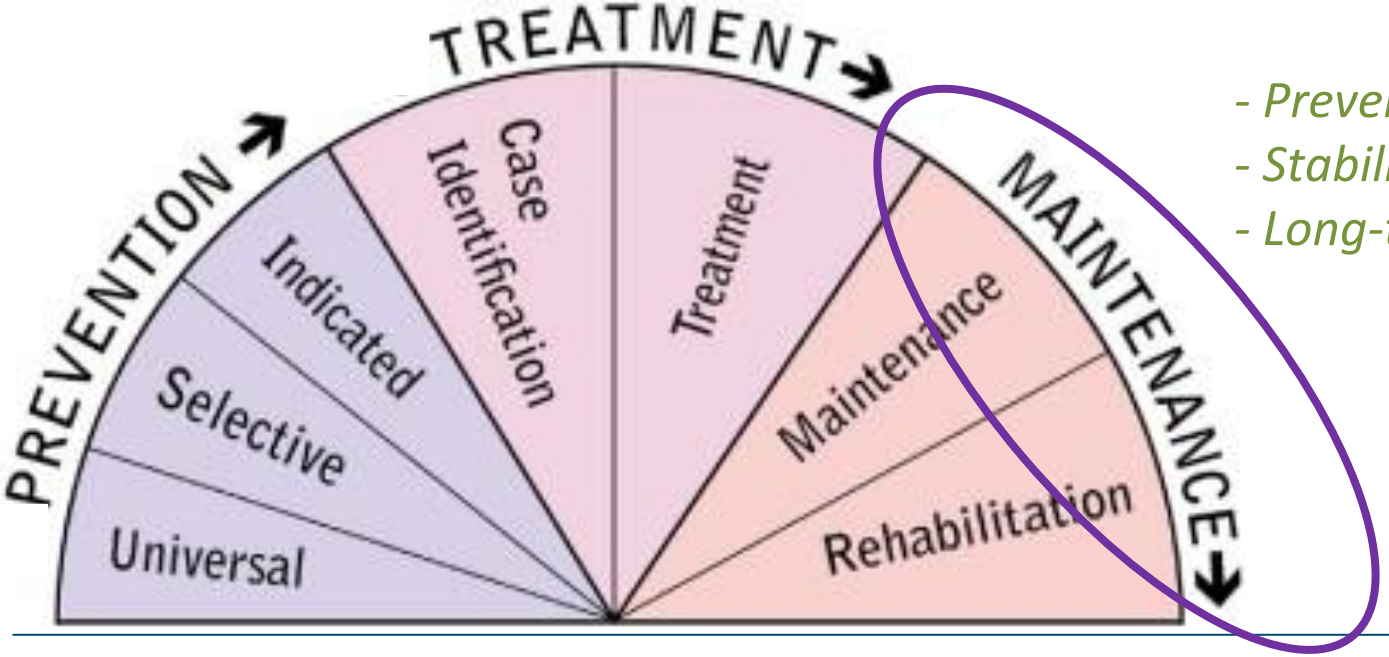

- *Prevent relapse*
- *Stabilize treatment gains*
- *Long-term support*

Institute of Medicine, 2009

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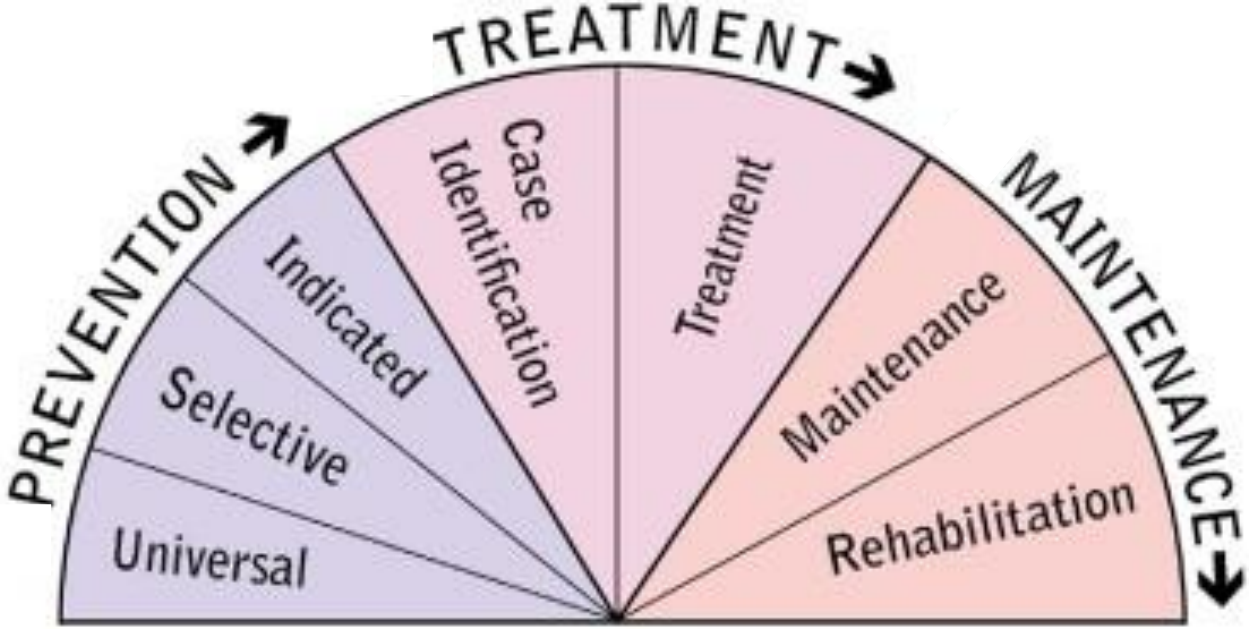


65% - 80%

Introduction

- Technology has different properties than f2f approaches
  - ➢ We need smart ways how to combine the settings to optimize care

➢ But where do we start?

➢ Simulation studies can support and guide decision making

Simulation study 1: Eating disorders

ORIGINAL ARTICLE

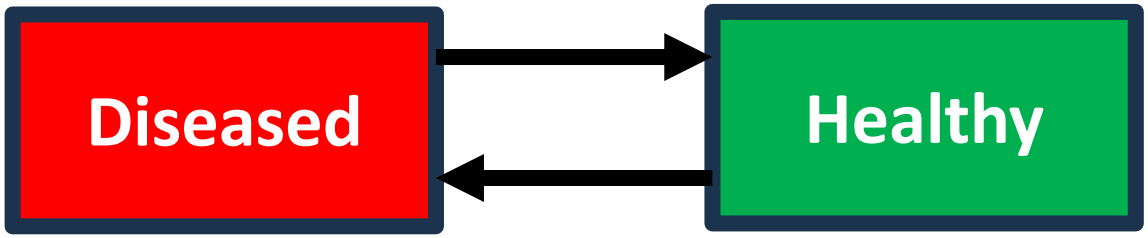
International Journal of EATING DISORDERS

Maximizing the public health impact of eating disorder services: A simulation study

Markus Moessner PhD | Stephanie Bauer PhD

Methods

- Markov model
- Transition probabilities between healths and diseased
  - Population‘s prevalence rate



Methods – Model Parameters

		Abbreviation	Definition	Estimate	SD[a]
Incidence rate		inc	Transition rate from healthy to diseased in one year	.015	.004
Spontaneous remissions[b]		rem	Transition rate from diseased to healthy in one year (without treatment)	.2	.05
Prevention[c]	Effect[c]	preven	Proportion of transitions from healthy to diseased prevented	.4	.2
	Reach	r_preven	Proportion of target population participating in a prevention program	.1	.05
Treatment	Effect[d]	effect	Proportion of successful treatments that result in a transition from diseased to healthy	.55	.05
	Reach[e]	util	Proportion of diseased seeking treatment	.23	.04
	Effectiveness[f]	eff	Proportion of successful treatments in routine care compared to treatment effect (see above)	.7	.2
	Relapse[g]	relapse	Proportion of successfully treated patients, that relapse	.5	.1
Relapse prevention	Effect[h]	after	Proportion of relapses prevented by participation in an aftercare program	.4	.1
	Reach	r_after	Proportion of successfully treated patients that participate in an aftercare/maintenance program	.1	.05

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	Reach[e]	util			
	Effectiveness[f]	eff			
	Relapse[g]	relap			
Relapse prevention	Effect[h]	after			
	Reach	r_aft			

Transition from healthy to diseased:

$$\text{inc} \times (1 - \text{preven} \times r\_\text{preven}) \quad (1)$$

Transition from diseased to healthy:

$$\begin{aligned} &\text{effect} \times \text{eff} \times \text{util} + \text{rem} \times (1 - \text{eff} \times \text{effect} \times \text{util} + \text{eff} \\ &\times \text{effect} \times \text{util} \times (\text{relapse} - \text{relapse} \times \text{after} \times r\_\text{after})) \\ &-\text{effect} \times \text{eff} \times \text{util} \times (\text{relapse} - \text{relapse} \times \text{after} \times r\_\text{after}) \end{aligned} \quad (2)$$

Results

- Only limited impact of current system
  - ~ 18% reduction (compared to no care at all)
  - Prevention only ~4%
  - Treatment only ~ 14%

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- **Which improvements would be most beneficial?**

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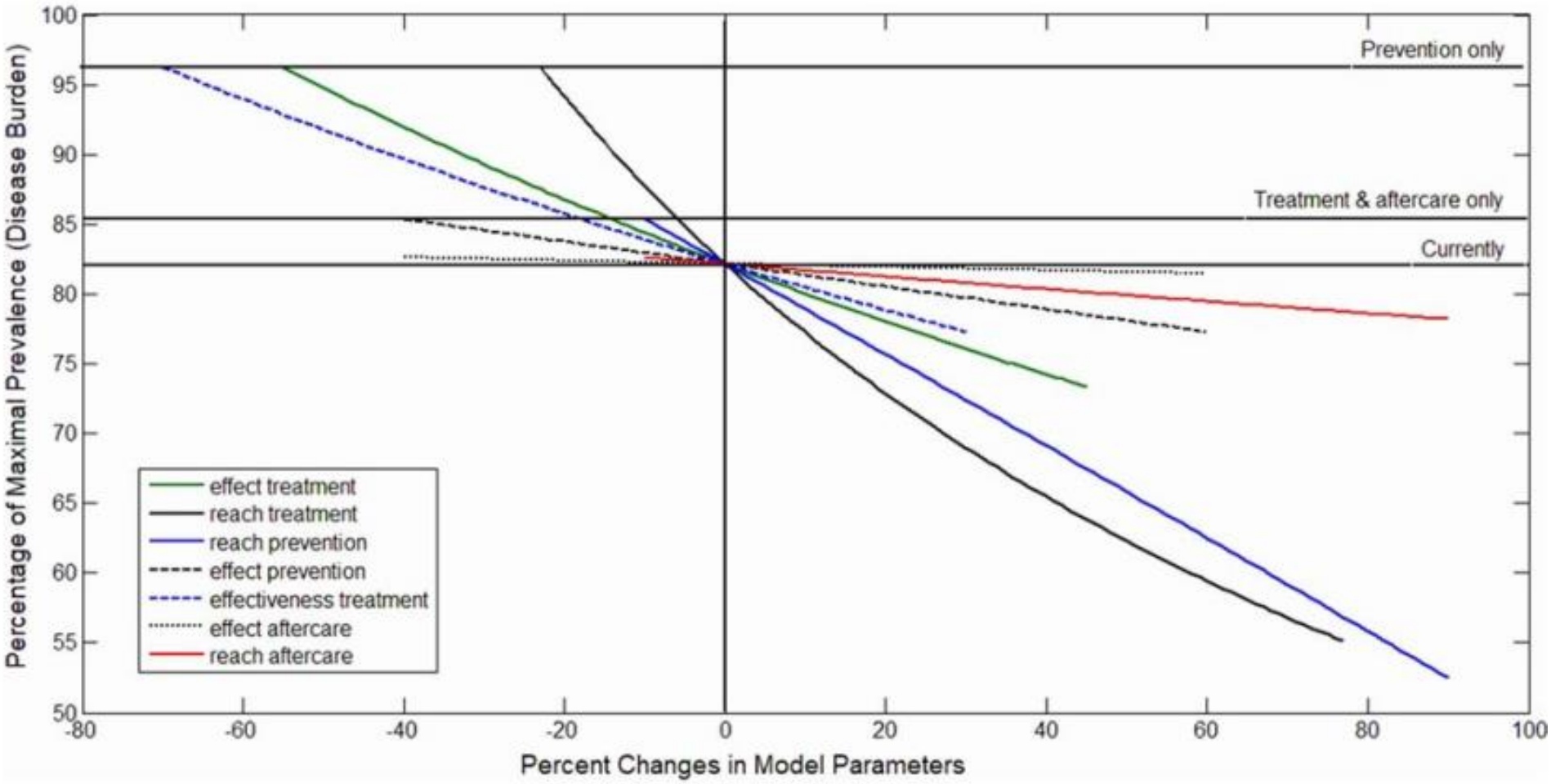
➢ **SIMULATION**

Results


Prevention only
Treatment & aftercare only
Currently
effect treatment
reach treatment
reach prevention
effect prevention
effectiveness treatment
effect aftercare
reach aftercare
Percentage of Maximal Prevalence (Disease Burden)
Percent Changes in Model Parameters
100
95
90
85
80
75
70
65
60
55
50
-80
-60
-40
-20
0
20
40
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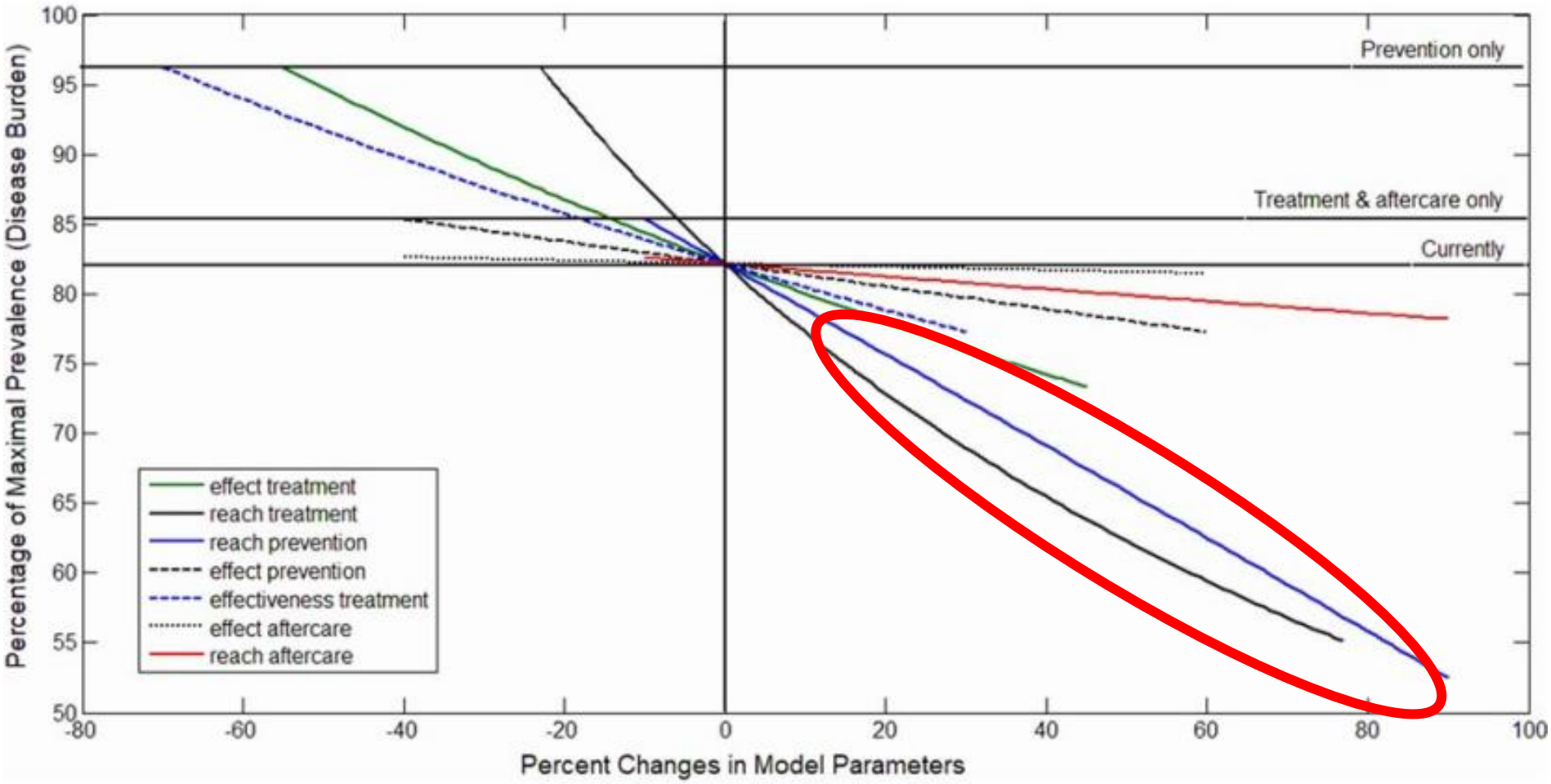
Results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Conclusion

- Dissemination of treatment and prevention!

- Effectiveness of treatment is not critical
  - As long as only a minority seeks and receives professional help, new treatment do not have a great public health impact (even if they were more effective)!

Simulation study 2: Depression

Pinpointing the potential of strategies to reduce the burden of depression: a simulation study

Maximilian Wilhelm [1], Stephanie Bauer [1], Markus Wolf [2], & Markus Moessner [1]

[1] Center for Psychotherapy Research, Heidelberg University Hospital, Germany

[2] Department of Psychology, University of Zurich, Switzerland

Methods

Markov model

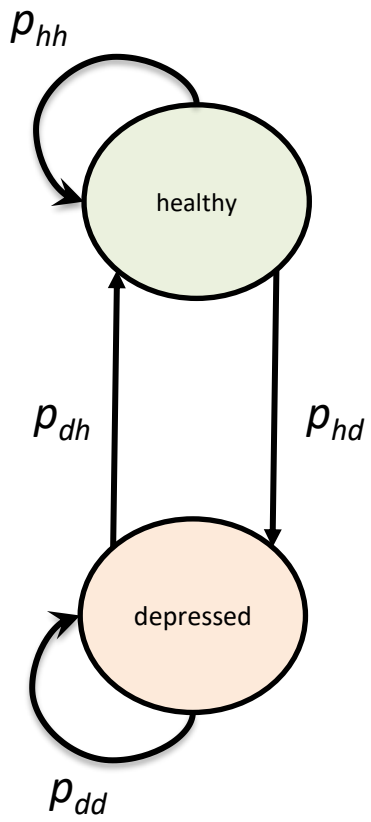
- **Whole lives**
- **Monthly transitions between two states {healthy, depressed}**
- **Disease burden = proportion of months spent in depression**

Parameters

- Epidemiology of depression
- Reach and effect of healthcare interventions
- Derived from literature

Stability

- **10,000 lives per Model x 1,000 Monte Carlo simulations**



bw|HPC

UK HD

Methods

selection of model parameters

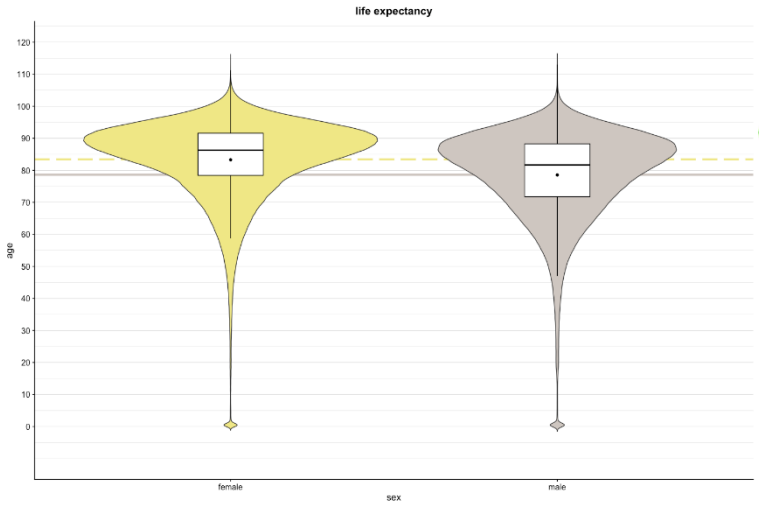
Parameter	Definition	Setting
Effect-Prevention [a]	Preventive interventions reduce the first onset of depression by 21%.	**.21**
Reach- Prevention	Proportion of target population receiving prevention measures estimated to be 5%.	**.05**
Effect- Treatment [b]	Proportion of patients who do not meet criteria for depression after treatment is 62%.	**.62**
Reach- Treatment [c]	Proportion of depressed who seek treatment within a year is about 33%.	**.33**
Effect-Aftercare [d]	Aftercare interventions reduce the risk of recurrence by 36%.	**.36**
Reach-Aftercare	Proportion of those treated who receive aftercare estimated to be 5%.	**.05**

Note: [a] van Zoonen et al. (2014); [b] Cuijpers et al. (2014); [c] Rommel et al. (2017); [d] Biesheuvel-Leliefeld et al. (2015).

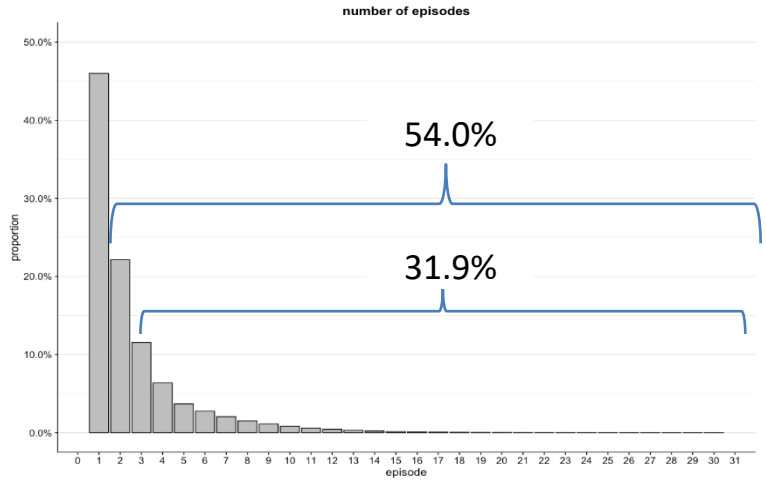
Methods

Plausibility

Sample:
10.000 cases
x
1000 simulations



- Life expectancy *M* = 80.9 (*SD* = 13.7)
- 11.4% Lifetime prevalence



- 54.0% > 1 episode
- Number of episodes *M* = 2.6 (*SD* = 2.5)
- Duration of episodes *M* = 14.5 (*SD* = 10.5)
  Non-chronic: *M* = 9.4 (*SD* = 5.8)
  Chronic: *M* = 19.9 (*SD* = 11.6)

→ Definition of chronic cases for this model
  Recurrent >= 3 episodes
  Persistent >= 24 months

Methods

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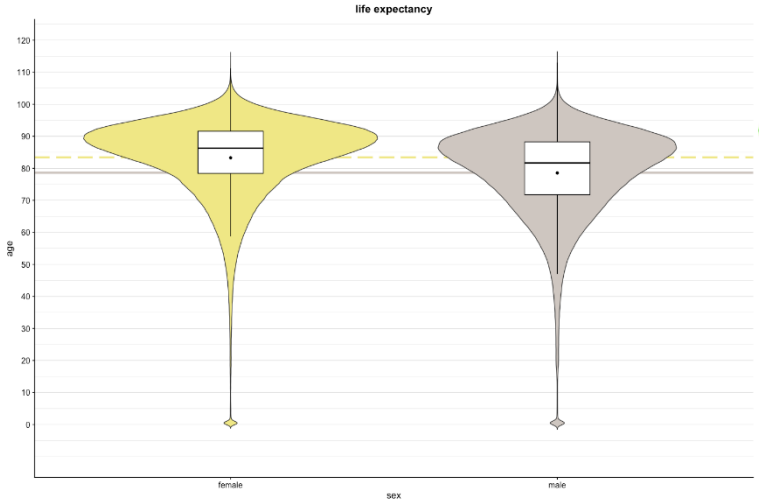
x
1000 simulations



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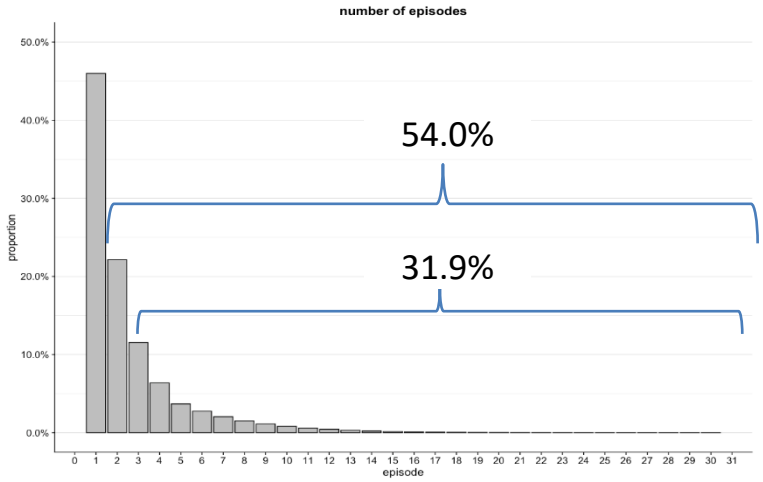
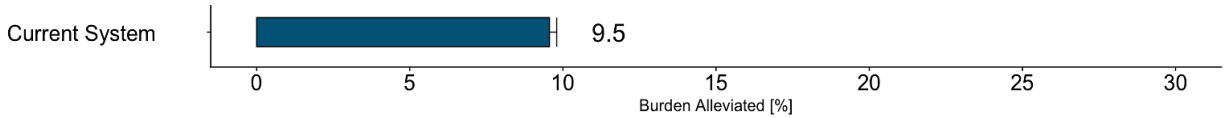


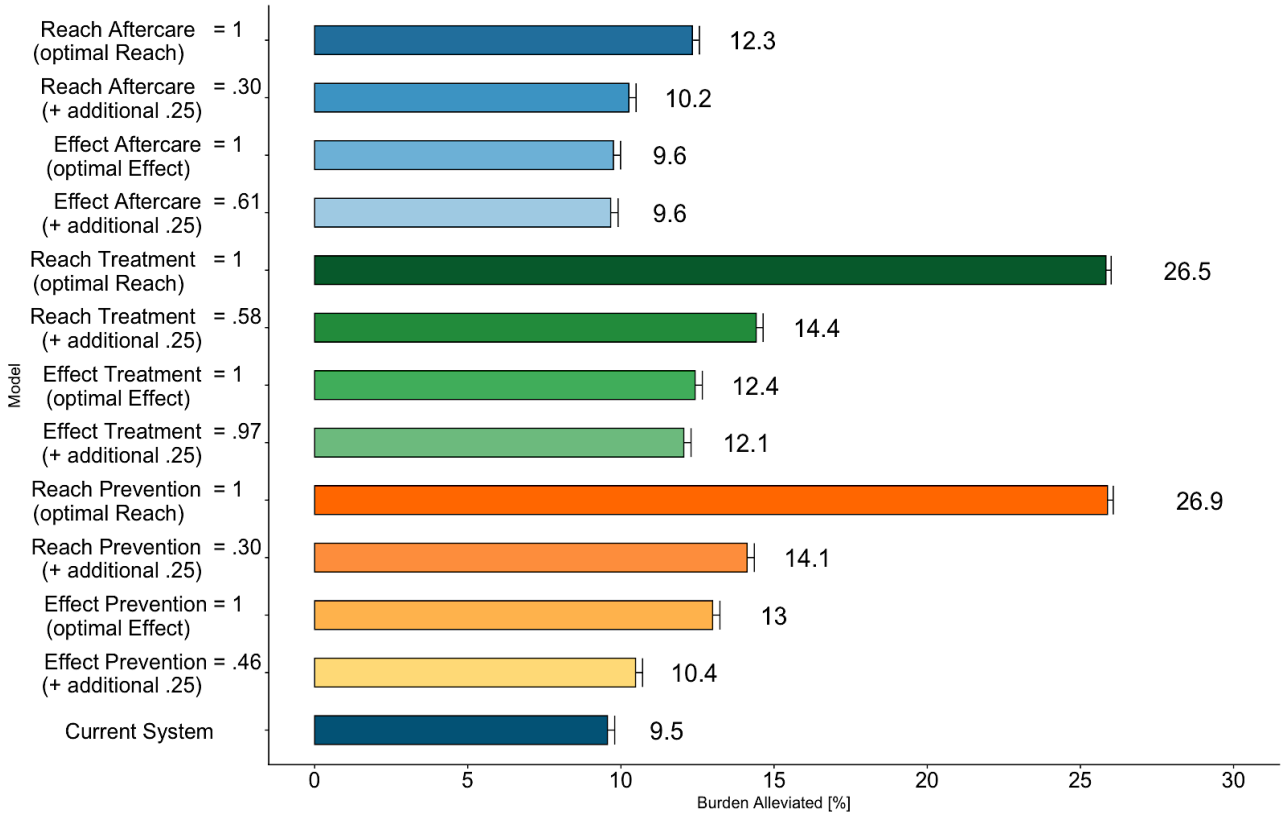
Results



Note: Results are reported in terms of disease burden alleviated with reference to a no healthcare scenario (reach of interventions set to 0).
For the manipulated healthcare parameters two options were simulated each: an increase of .25 points and an increase to an optimal situation = 1.

simulated cases per model: N = 10,000,000

Results



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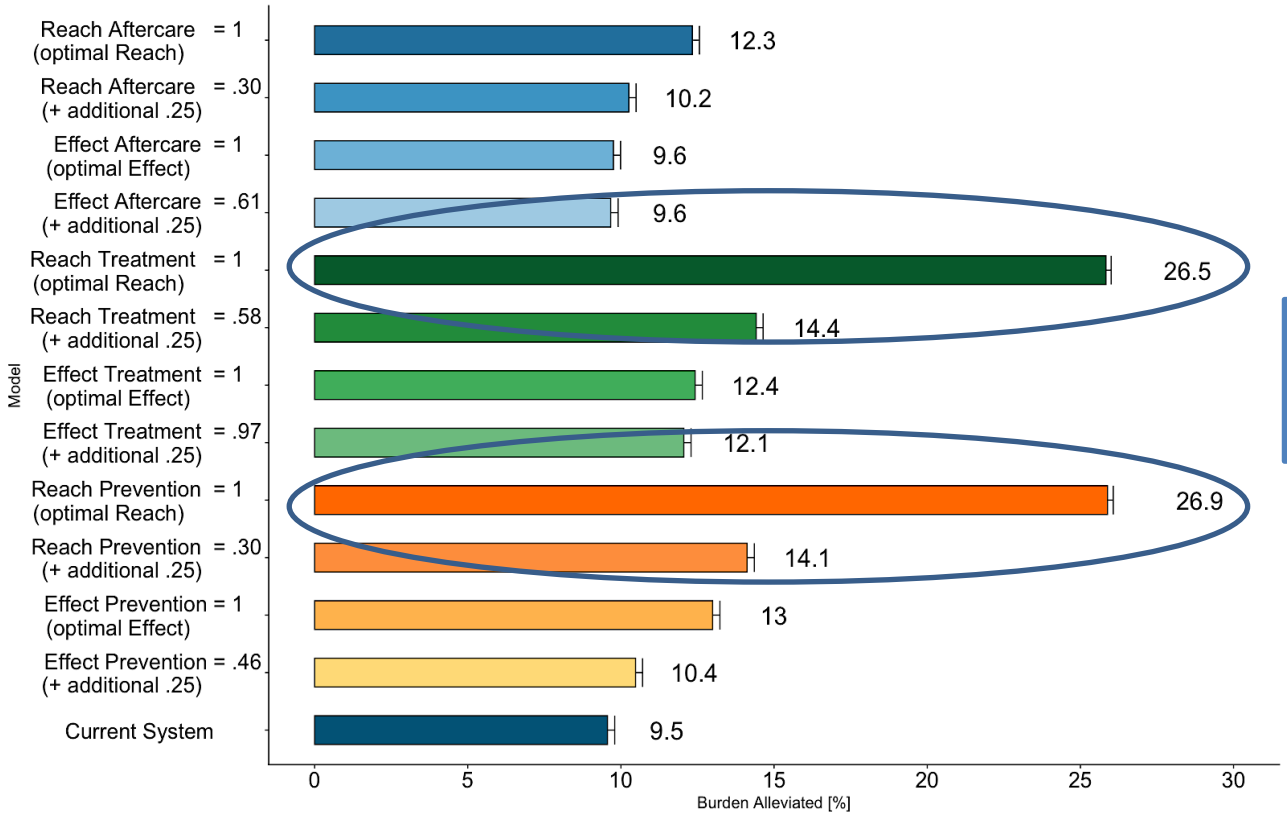

Dissemination
Prevention
Treatment

Note: Results are reported in terms of disease burden alleviated with reference to a no healthcare scenario (reach of interventions set to 0).
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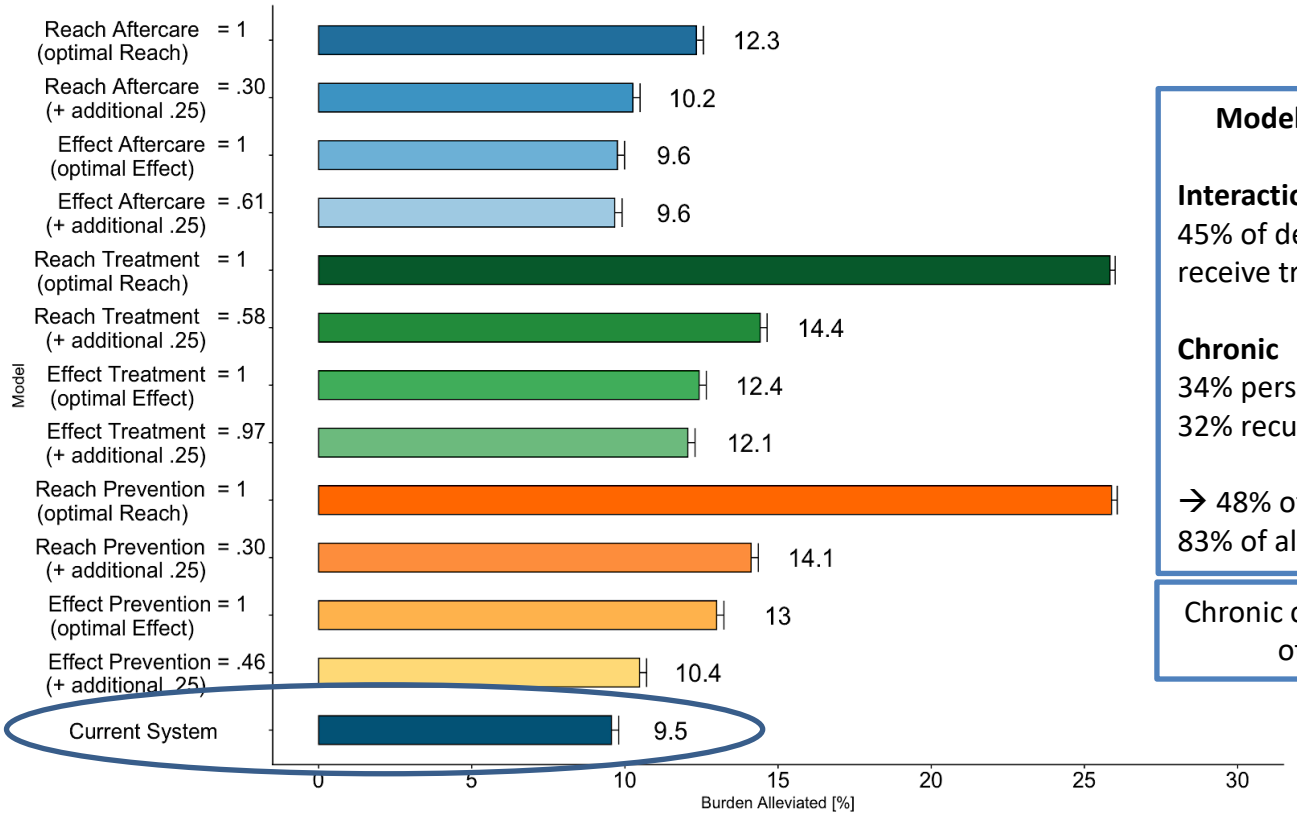
Results



Model - Current System

Interactions
45% of depressed individuals receive treatment at all.

Chronic
34% persistent
32% recurrent

→ 48% of individuals cause 83% of all depressed months

Chronic cases cause majority of impairment

Note: Results are reported in terms of disease burden alleviated with reference to a no healthcare scenario (reach of interventions set to 0). For the manipulated healthcare parameters two options were simulated each: an increase of .25 points and an increase to an optimal situation = 1.

simulated cases per model: N = 10,000,000

Summary

- Reach of prevention and treatment most promising in ED and depression!
- Majority of suffering in depression is caused by chronic cases

➢ Dissemination of treatment & prevention is crucial

Exploiting technology to facilitate help-seeking and to disseminate prevention

Two brief examples:

- ProYouth
  - Dissemination
  - Access to care
- ProHEAD (teaser)

Example II: ProYouth

- ProYouth – ED prevention
  - Internet-based, open
  - Targeted
  - Individualised
  - Unstructured
  - Modules
    - Screening, weekly monitoring & feedback, psychoeducation, news section
    - Group chats, personal chats, forum, alarm system

Bauer et al., 2009;
Bauer et al., 2013;

- **How can we successfully disseminate the intervention?**
  - **Cost and reach of dissemination strategies**
- (How can we reach the target population?)
  - At risk adolescents

Dissemination Strategies

- Channels of Dissemination
  - Promotion in high schools
  - Promotion at universities
  - Face-to-face activities
  - Online promotion (e.g. Internet forums, online magazines)
  - Social media
  - Traditional media

  ……..

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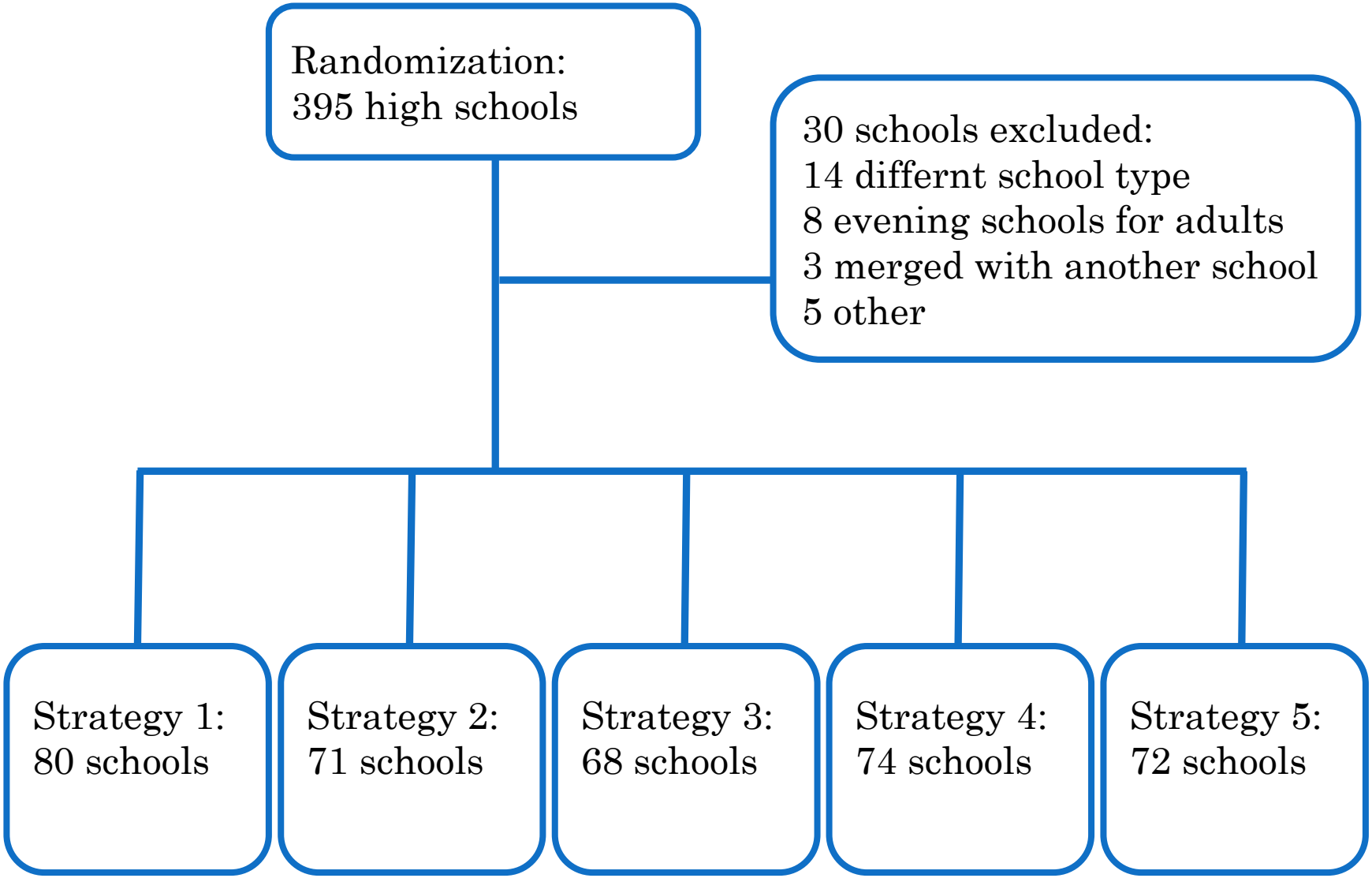
  - Social media
  - Traditional media

  ……..

Dissemination Strategies

- RCT to investigate cost-effectiveness
- 395 schools were randomized to 5 strategies, stratified by contact person & type of school:
    - Strategy 1: Information materials
    - Strategy 2: Phone call / Email contact & Information materials
    - Strategy 3: Phone call / Email contact, Student representative, Information materials
    - Strategy 4: Phone call / Email contact, Psycho-education (f2f), Information materials
    - Strategy 5: Phone call / Email contact, Psycho-education (f2f), Workshop (computer room), Information materials



Moessner at al. (2016)

Outcome Criteria

- Cost:
  - Printing, mail, transportation, staff time (emails, phone calls, etc.)
- Effect:
  - Page visits, screenings, registrations

Moessner at al. (2016)

Results

- Participation rate:
  - Strategy 1: 100% (no choice)
  - Strategy 2: 88.7% (63 schools)
  - Strategy 3: 50.0% (34 schools)
  - Strategy 4: 23.0% (17 schools)
  - Strategy 5: 6.9% (5 schools)

Cost per Strategy (€)

	S 1 (N=80)	S 2 (N=71)	S 3 (N=68)	S 4 (N=74)	S 5 (N=72)
Time	240	275	299.90	3226.50	2455.00
Travels	-	-	-	870.20	189.80
Materials	622.20	404.35	229.70	30.31	16.40
Total	862.20	679.35	529.60	4127.01	2661.20

Moessner at al. (2016)

Reach/ Effect

	S 1 (N=80)	S 2 (N=71)	S 3 (N=68)	S 4 (N=74)	S 5 (N=72)
visit	49	37	26	229	941
screening	21	17	7	150	806
registration	2	8	2	55	388

Moessner at al. (2016)

Cost/ Effect Ratios

	S 1 (N=80)	S 2 (N=71)	S 3 (N=68)	S 4 (N=74)	S 5 (N=72)
€/ visit	862.20/ 49 = 17.60	679.35/ 37 = 18.36	529.60/ 26 = 20.37	4127.20/ 229 = 18.02	2661.20/ 941 = 2.83
€/ screening	862.20/ 21 = 41.06	679.35/ 17 = 39.96	529.60/ 7 = 75.66	4127.20/ 150 = 27.51	2661.20/ 806 = 3.30
€/ registration	862.20/ 2 = 431.10	679.35/ 8 = 84.92	529.60/ 2 = 264.80	4127.20/ 55 = 75.04	2661.20/ 388 = 6.86

Moessner at al. (2016)

Discussion

- Dissemination
  - Major obstacle for the implementation of prevention into routine care
  - Implementation fails when dissemination fails
  - Challenging and expensive!
    - Budget is necessary
  - RCT efficacy trials are misleading when it comes to dissemination (incentives, «unlimited» ressources!)
- Need for effective & cost-effective strategies!
  - Yet, hardly any research

Facilitate access to conventional care

- Measures in ProYouth
  - Low-threshold access
  - Psychoeducation & destigmatization
  - Alarm signals & „personal“ contact

Facilitate access to conventional care

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  ➢ Can ProYouth facilitate access to routine care ??

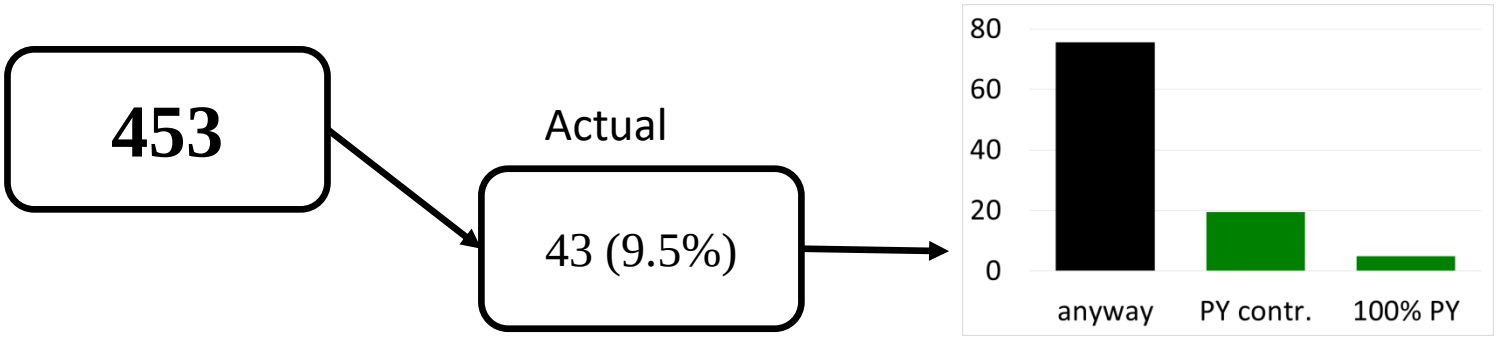
Methods

- Observational study
- N=453 ProYouth participants
- Assessed at registration and 3 months follow-up
  - Help-seeking
  - Planned help-seeking
  - Potential help-seeking
- IF YES: Contribution of ProYouth?
- IF NO: Barriers (why not)?

Sample (N=453)

- 72.2% female
- Age: M=15.7 (SD=4.8; range 12-56)
- 84.3% high school students, 7.1% university students
- BMI: M=20.5 (SD=3.9)
- WCS score: **M=36.4** (SD=26.4)
- PHQ-4: M=2.8 (SD=3.0)
- 6.6% prior ED treatment
- 82.1% introduced at school; 6.2% link on Internet

Results



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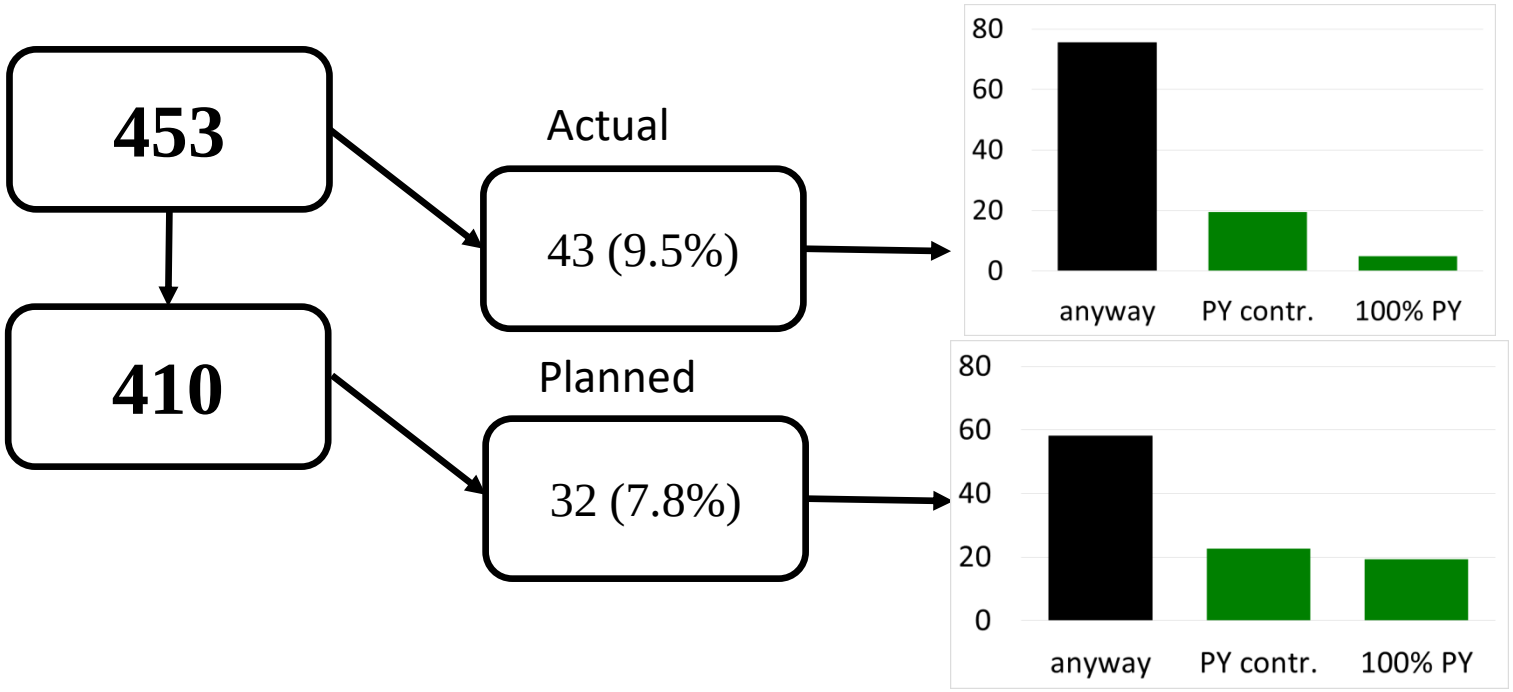
453
410
Actual
43 (9.5%)
Planned
32 (7.8%)
80
60
40
20
0
anyway
PY contr.
100% PY
80
60
40
20
0
anyway
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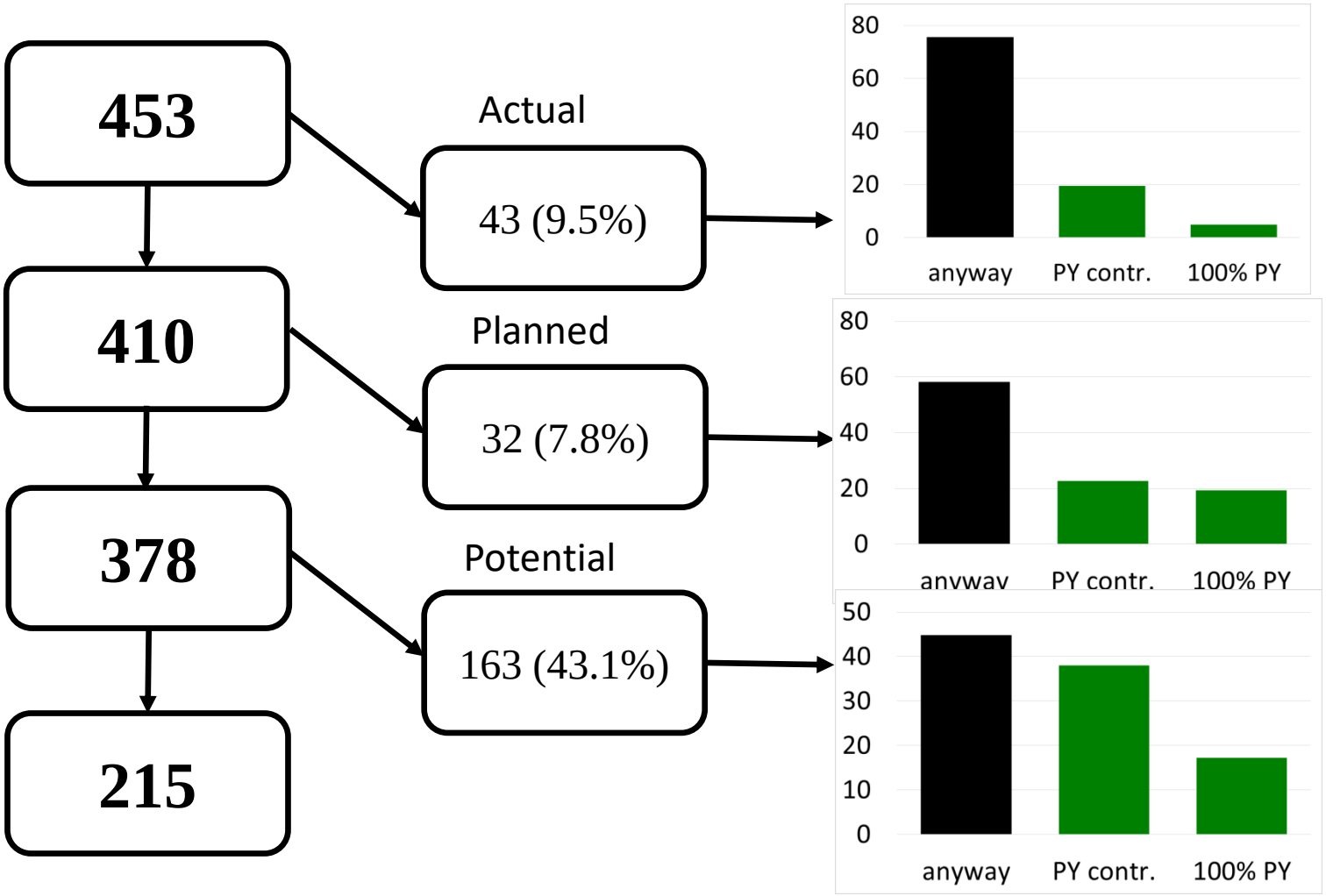
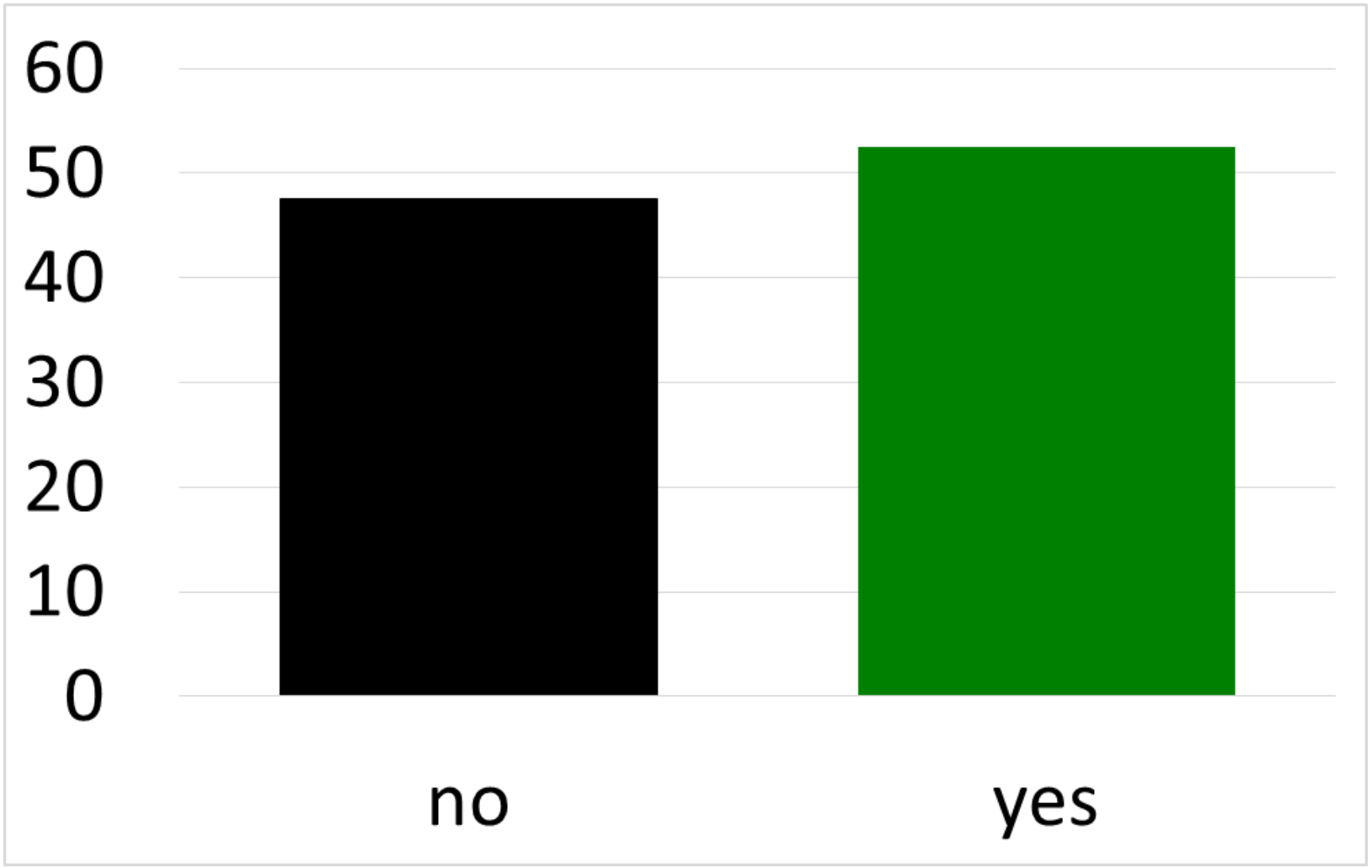
100% PY

Results

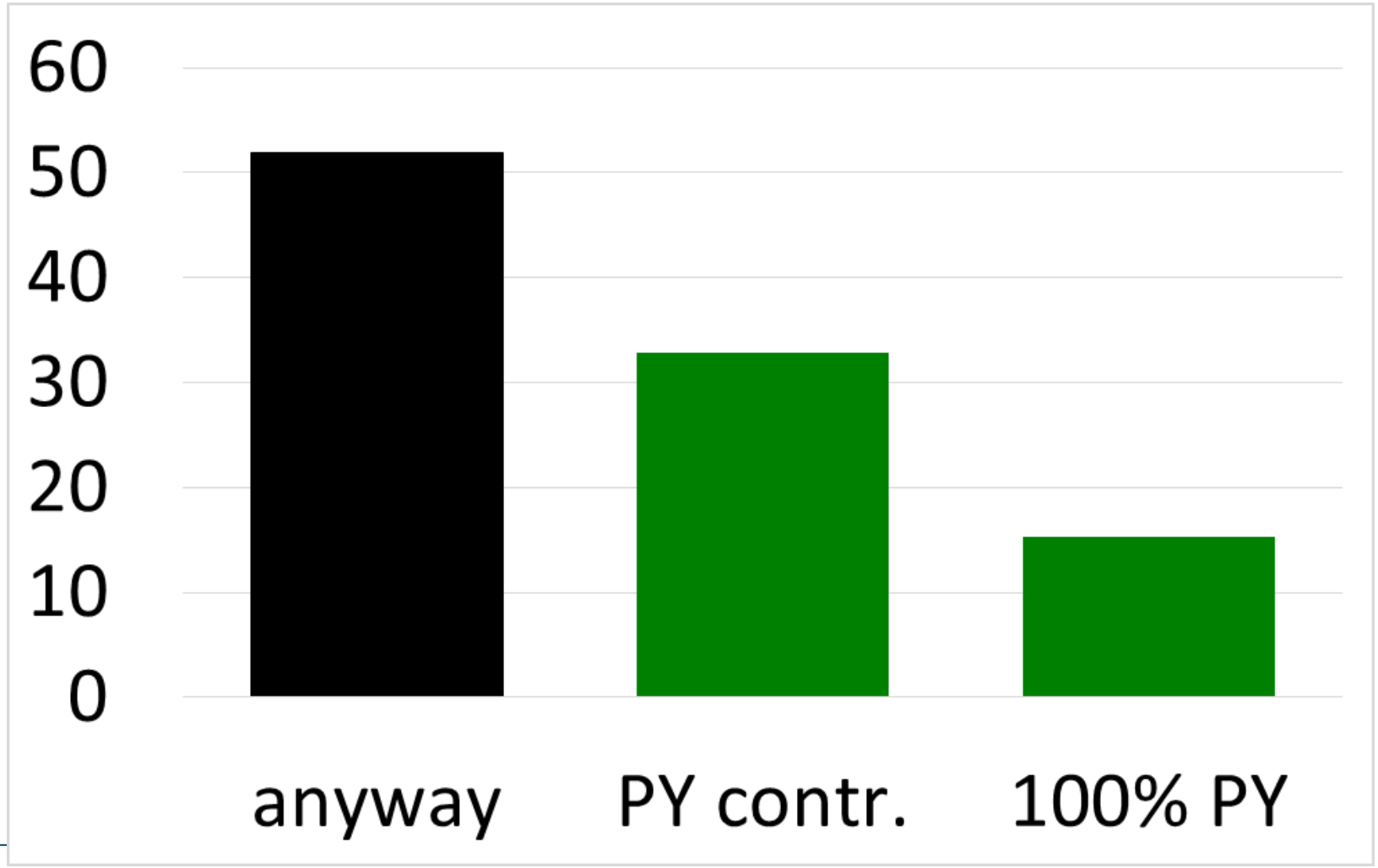


Moessner et al., 2016

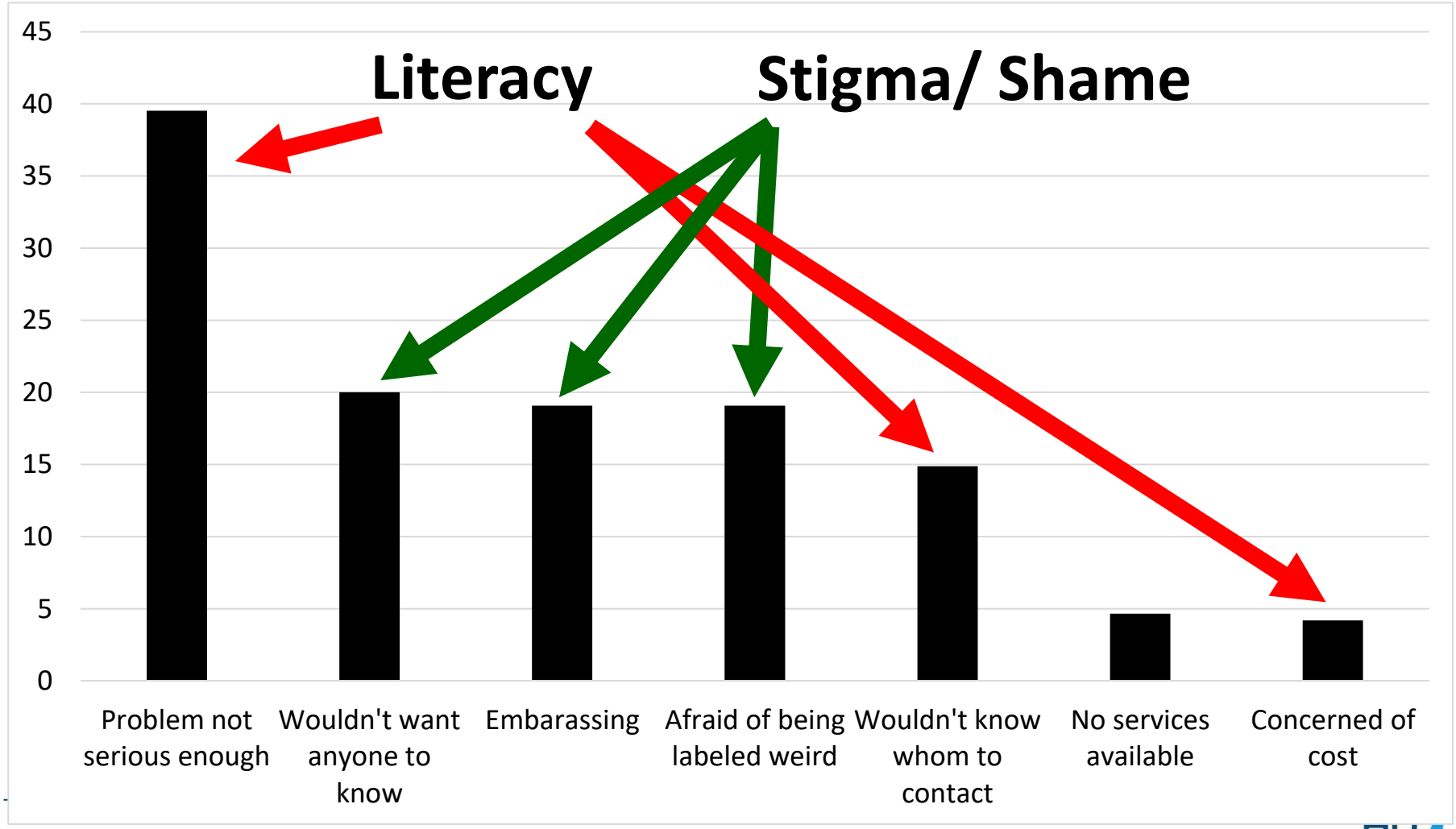
Help-seeking



Help-seeking



Barriers

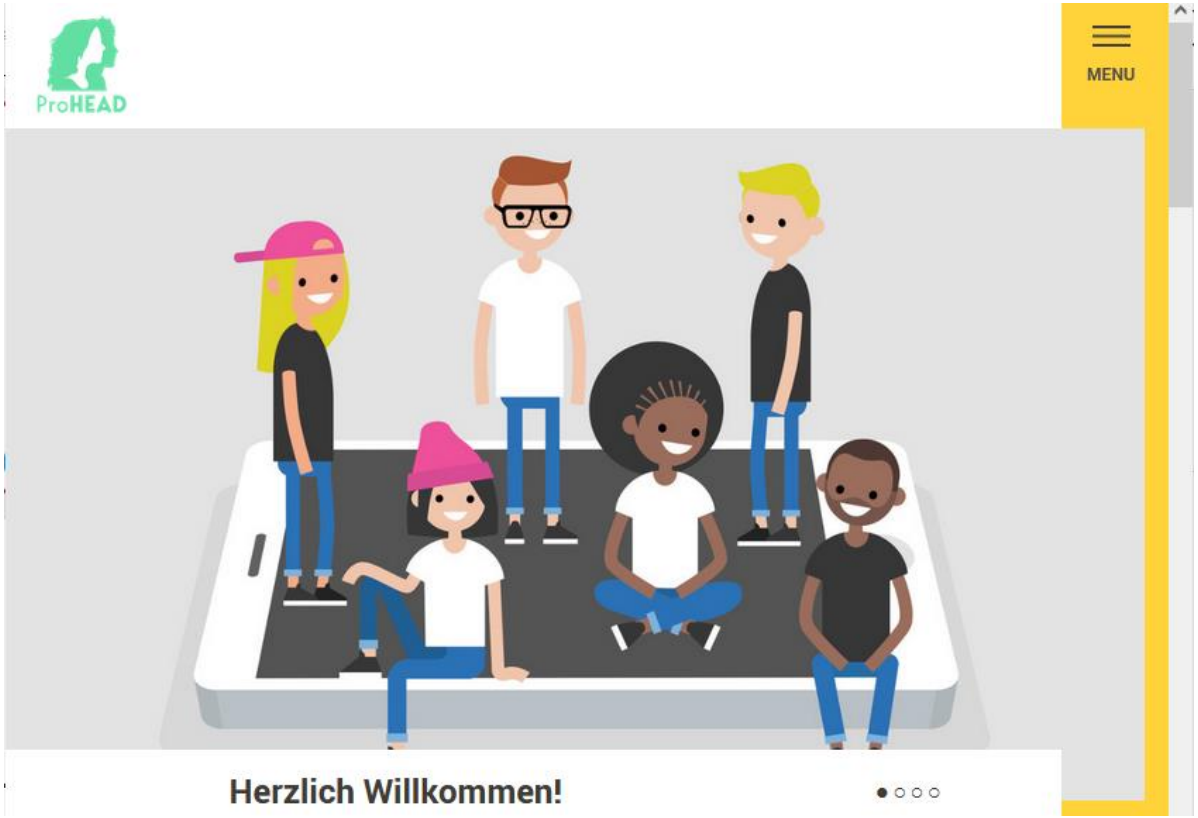


Moessner et al., 2016

Conclusion

- Preliminary evidence:
  - ProYouth facilitates access to routine care
  - Effect on public health beyond prevention
- BUT:
  - Requires lots of resources (most of the overall resources)
  - Internet-based prevention is hard to disseminate
  - ➢ Not perfect…..

Promoting Help-seeking using E-technology for ADolescents (ProHEAD)



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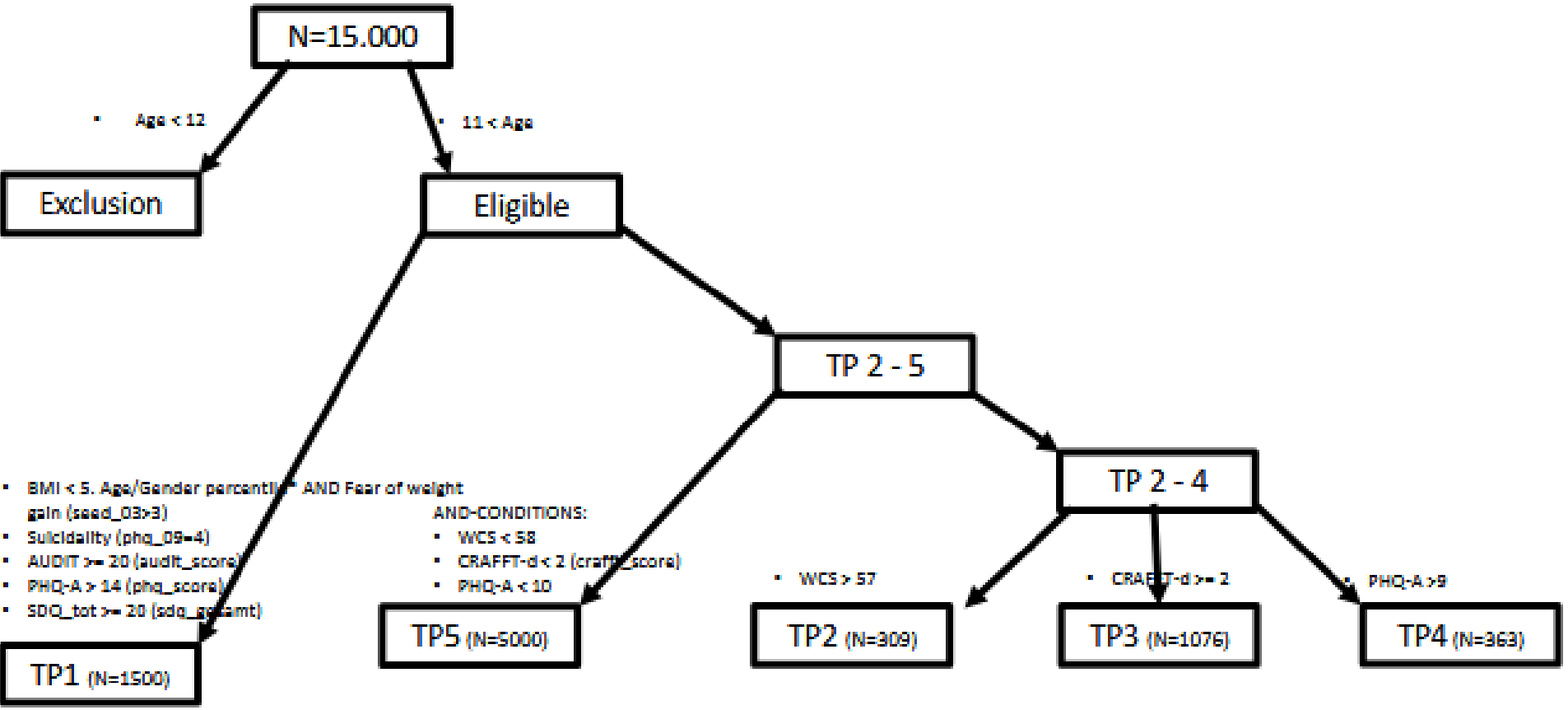
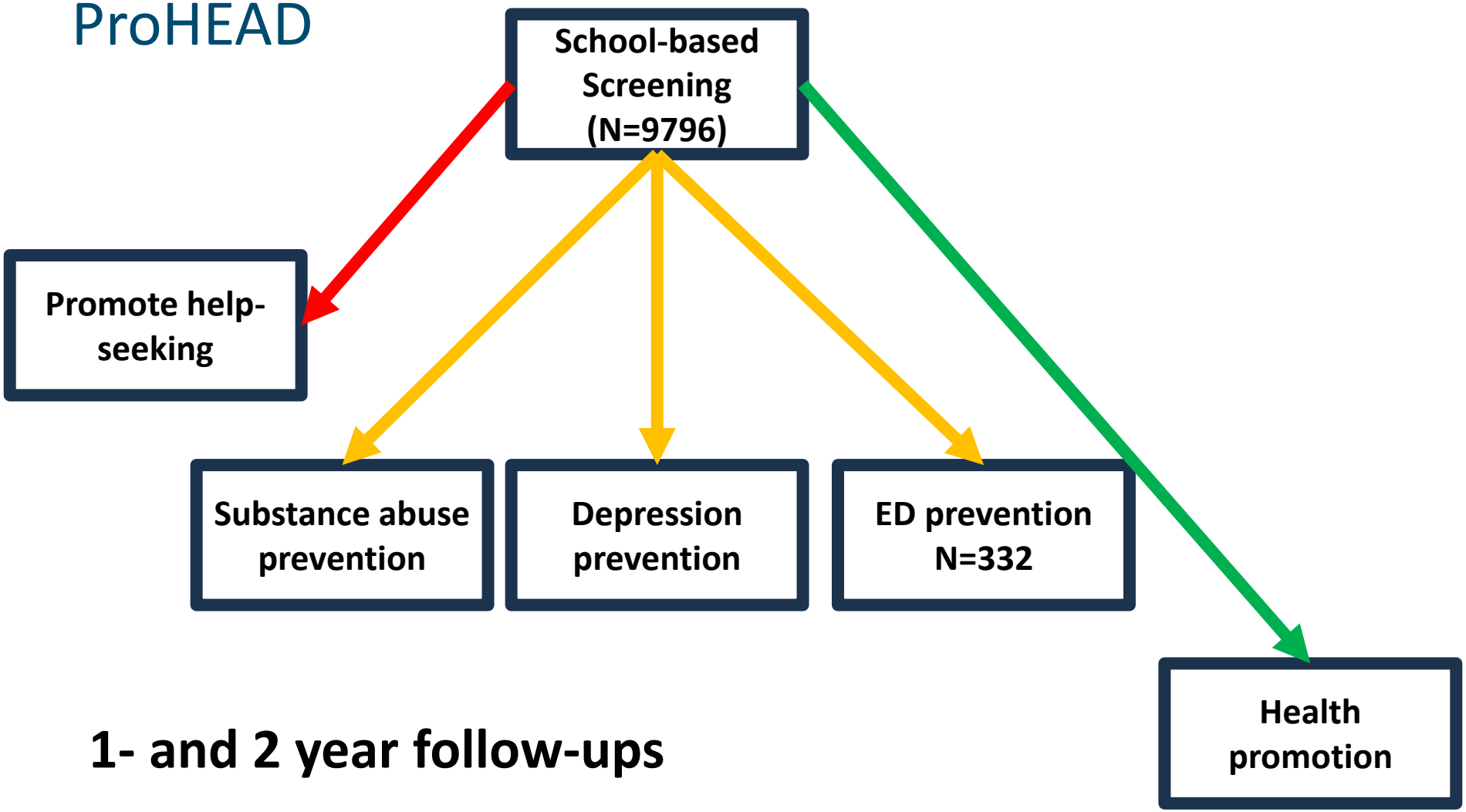
ProHEAD

- School-based screenings
- Assignment to 1 of 5 trials based on individual symptoms/ problems
- 5 RCTs for
  - **Promotion of help-seeking**
  - Prevention of substance abuse
  - Prevention of depression
  - **Prevention of ED**
  - Health promotion

ProHEAD


N=15.000
Age < 12
11 < Age
Exclusion
Eligible
TP 2 - 5
TP 2 - 4
BMI < 5. Age/Gender percentile AND Fear of weight gain (seed_03>3)
Suicidality (phq_09=4)
AUDIT >= 20 (audit_score)
PHQ-A > 14 (phq_score)
SDQ_tot >= 20 (sdq_gesamt)
AND-CONDITIONS:
WCS < 58
CRAFFT-d < 2 (crafft_score)
PHQ-A < 10
WCS > 57
CRAFFT-d >= 2
PHQ-A >9
TP1 (N=1500)
TP5 (N=5000)
TP2 (N=309)
TP3 (N=1076)
TP4 (N=363)

ProHEAD



1- and 2 year follow-ups

ProHEAD

- Data collection ended 08/ 2023
  - No final results, yet…. ☹
- Preliminary results subproject 2: ED prevention
  - High user satisfaction & acceptance
  - Addition of new moduls did not yield better effects

Preliminary results ED prevention

ProYouth	AUF	ENT	FU	PRE-POST ES
EDEQ_TOT	2.69; 1.01	2.19; 1.14	2.17; 1.36	0.57
EDEQ_WEIGHT	3.23; 1.35	2.61; 1.40	2.71; 1.59	
EDEQ_SHAPE	3.54; 1.26	3.01; 1.48	2.97; 1.71	
EDEQ_RESTRAINT	2.25; 1.48	1.75; 1.25	1.59; 1.47	
EDEQ_EATING	1.75; 1.33	1.38; 1.26	1.43; 1.34	
DISS				
EDEQ_TOT	2.51; 0.92	1.85; 1.07	1.80; 1.17	0.59
EDEQ_WEIGHT	3.18; 1.22	2.34; 1.27	2.25; 1.41	
EDEQ_SHAPE	3.44; 1.21	2.55; 1.35	2.46; 1.42	
EDEQ_RESTRAINT	2.03; 1.30;	1.45; 1.37	1.35; 1.30	
EDEQ_EATING	1.38; 0.98	1.05; 1.09	1.12; 1.11	
GROUP				
EDEQ_TOT	2.60; 1.05	2.18; 1.31	1.94; 1.48	0.38
EDEQ_WEIGHT	3.25; 1.27	2.65; 1.58	2.31; 1.59	
EDEQ_SHAPE	3.51; 1.30	2.95; 1.58	2.59; 1.74	
EDEQ_RESTRAINT	2.18; 1.36	1.73; 1.46	1.51; 1.58	
EDEQ_EATING	1.47; 1.26	1.40; 1.24	1.37; 1.44	
Total				
EDEQ_TOT	2.60; 0.99	2.06; 1.18	1.98; 1.34	0.48
EDEQ_WEIGHT	3.22; 1.28	2.52; 1.42	2.44; 1.54	
EDEQ_SHAPE	3.50; 1.25	2.83; 1.47	2.69; 1.63	
EDEQ_RESTRAINT	2.15; 1.38	1.64; 1.36	1.49; 1.44	
EDEQ_EATING	1.53; 1.21	1.27; 1.20	1.30; 1.29	

Preliminary results ED prevention

ProYouth	AUF	ENT	FU	PRE-POST ES
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EDEQ_RESTRAINT	2.15; 1.38	1.64; 1.36	1.49; 1.44	
EDEQ_EATING	1.53; 1.21	1.27; 1.20	1.30; 1.29	

Summary ProHEAD

- Efficient way to
  - Disseminate prevention in schools
  - Increase mental health literacy in children and adolescents
  - Intervention targeting help-seeking proved to be well accepted and promising
    - Efficacious???

Discussion

- Limited public health impact of services
- Shift of focus needed
  - Efficacy ► public health impact
  - Efficacy trials ► service research
  - Success stories ► needs, shortcomings, & risks
- Technology-based interventions can help to overcome the shortcomings of traditional services
  - ➢ We need to figure out how!

Discussion

- Problems of traditional health differ between countries and disorders
  - Limited help-seeking seems to be universal (for different reasons though)
- Specific properties of technology-based interventions
  - Address some of the problems of traditional health care
  - Yet, dissemination is challenging!

Thank you for your attention!

Comments?

Questions?

Contact: Markus Moessner
moessner@psyres.de

How to reach “at risk” adolescents

- Promotion in high schools
- Promotion at universities
- Face-to-face activities
- Online promotion (e.g. Internet forums, online magazines)
- Social media
- Traditional media

…….

Observational Study

- N=3.548 ProYouth participants
  - Asked at registration
- Mean age 16,6 (SD=5,4)
- 69,5 % female
- Strategies:
  - School-based (N=2.739; 77,2%)
  - Online dissemination (N=255; 7,2%)
    - Links in forums, etc.
  - Peers (recommended by friends) (N=141; 4,0%)
  - Flyers/ posters (N=118; 3,3%)
  - Other (N=295; 8,3%)

Bauer at al. (in press)

User characteristics

		Total (N = 3548)	School (N = 2739)	Online link (N = 255)	Recommended by friend (N = 141)	Flyer/ poster (N = 118)	Other (N = 295)	Test statistics	p
Age	*M* (*SD*)	16.6 (5.40)	15.0 (2.58)	22.3 (7.40)	20.9 (8.3)	23.2 (8.5)	22.5 (7.7)	$F_{(4,3542)}$ = 438.2	<.001
Sex	% female	69.5	62.7	96.1	90.1	89.0	91.2	$\chi 2_{(4)}$ = 260.9	<.001

Bauer at al. (in press)

User characteristics

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Sex	% female	69.5	62.7	96.1	90.1	89.0	91.2	$\chi2_{(4)}$ = 260.9	<.001
BMI	*M* (*SD*)	20.76 (3.98)	20.68 (3.79)	20.94 (4.37)	20.50 (4.25)	21.21 (4.70)	21.26 (4.80)	$F_{(4,3486)}$ 1.99	.093
WCS	*M* (*SD*)	40.3 (28.3)	32.4 (24.1)	72.9 (22.0)	64.9 (26.3)	63.6 (26.1)	62.7 (25.6)	$F_{(4,3542)}$ = 310.2	<.001
WCS > 57	%	29.0	17.4	78.8	65.7	63.6	63.1	$\chi2_{(4)}$ = 812.7	<.001
Bingeing[1]	%	36.5	27.3	76.9	66.0	63.6	61.7	$\chi2_{(4)}$ = 449.1	<.001
Laxatives[1]	%	5.7	2.8	21.6	10.6	12.7	13.9	$\chi2_{(4)}$ = 215.1	<.001
Vomiting[1]	%	11.4	4.5	47.5	29.1	28.8	28.1	$\chi2_{(4)}$ = 619.0	<.001
Low calorie food[1]	%	38.9	29.0	81.2	69.5	63.6	69.5	$\chi2_{(4)}$ = 507.0	<.001
Exercise[1]	%	48.2	46.7	58.0	61.0	52.5	46.4	$\chi2_{(4)}$ = 23.0	<.001
Bingeing and vomiting[1]	%	9.7	3.4	42.0	27.0	28.8	24.7	$\chi2_{(4)}$ = 599.3	<.001
Previous tx	%	8.9	2.7	34.9	29.1	22.0	28.9	$\chi2_{(4)}$ = 584.5	<.001

User characteristics

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User behaviour - Logins

- M (Md [IQR])
- School 1.3 (1 [0-1])
- Online 13.4 (2 [1-5])
- Recommended 20.4 (1 [1-3])
- Flyer/ poster 6.2 (1 [0-3])
- Other 3.7 (1 [0-3])

Bauer et al. (in press)

User behaviour - PageHits

	M (Md [IQR])
• School	12.8 (2 [0-11])
• Online	129.9 (19 [2-53])
• Recommended	116 (13 [3-34])
• Flyer/ poster	63.4 (11 [0-28])
• Other	98.8 (15 [0-39])

Bauer et al. (in press)

User behaviour – Forum posts & Chats

	Posts (%)	Chats (%)
School	9.9	11.4
Online	11.4	10.2
Recommended		
Flyer/ poster	5.1	8.5
Other	10.2	7.8

Bauer et al. (in press)

Example I

The Impact of Video-Based Micro-Interventions on Attitudes towards Mental Health and Help-Seeking: An Online-Experiment (INABI)

Diana Lemmer, Markus Moessner, Nicolas Arnaud,
Harald Baumeister, Agnes Mutter, Sarah-Lena Klemm, Paul Plener,
Christine Rummel-Kluge, Rainer Thomasius, Michael Kaess, Stephanie Bauer

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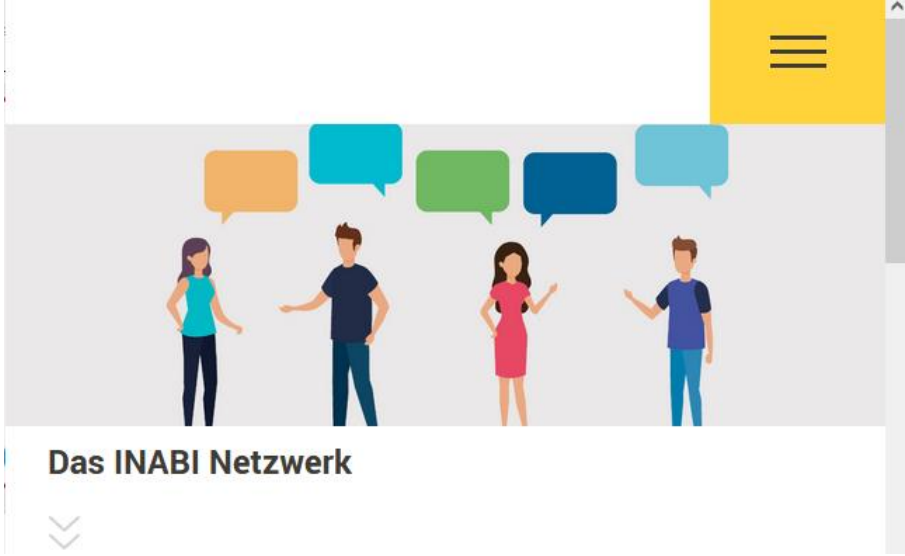
of Education
and Research

INABI



- Barriers to help-seeking
  - Mental health literacy
  - Stigma
  - Help-seeking attitudes
  - …..
- How can we address these barriers and increase help-seeking online?

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INABI

- Idea: Video-based interventions
- Develop educational „fun“ videos for adolescents that facilitate help-seeking
  - Cheap
  - Easy to disseminate

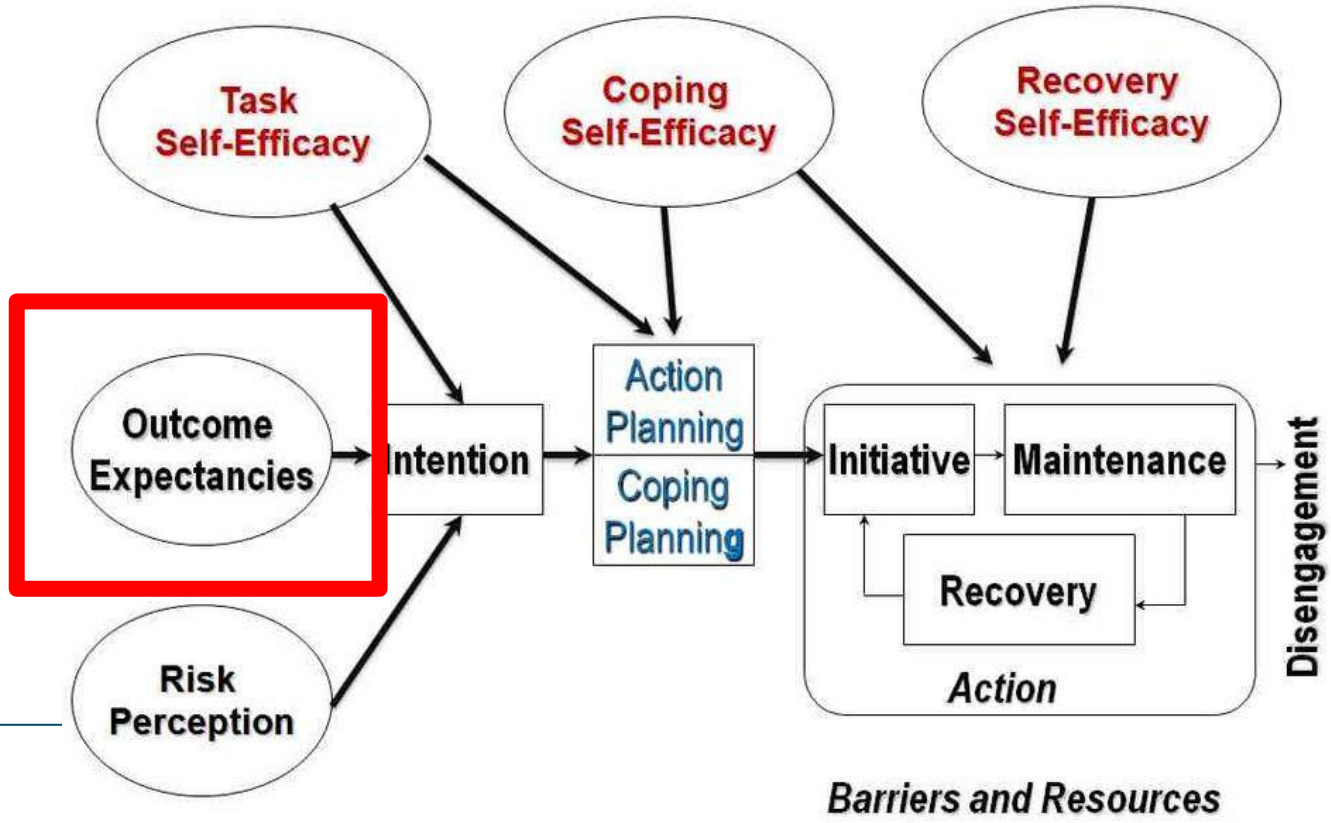
- Based on case vignettes for 5 disorders

Intervention

- Intervention 1: Psychoeducation to increase mental health literacy
  - What is the specific disorder?
  - What are symptoms, reasons, early warning signs?
  - Why should I get help?
  - Where do I get help?
  - Whom can I talk to?

Intervention

- Intervention 2: Outcome Expectancies (health action process approach (HAPA))



Interventions

- All videos were made with powtoon
  - By experts for the specific disorder

- For each of the diagnosis, a case vignette was produced:
  - A young girl/ boy suffering from the disorder, not naming the disorder

Objectives

- 1. To investigate the effectiveness in the promotion of potential MH help-seeking
- 2. To investigate effectiveness in the improvement of attitudes towards MH problems and MH service use (stigmatization, attitudes toward seeking MH services).
- 3. To investigate the quality of the videos.

Methods

- Online experiment for five disorders
  - Bulimia nervosa
  - Depression
  - NSSI
  - GAD
  - Alcohol abuse
- Inclusion criteria:
  - German language skills
  - Age between 14 & 29

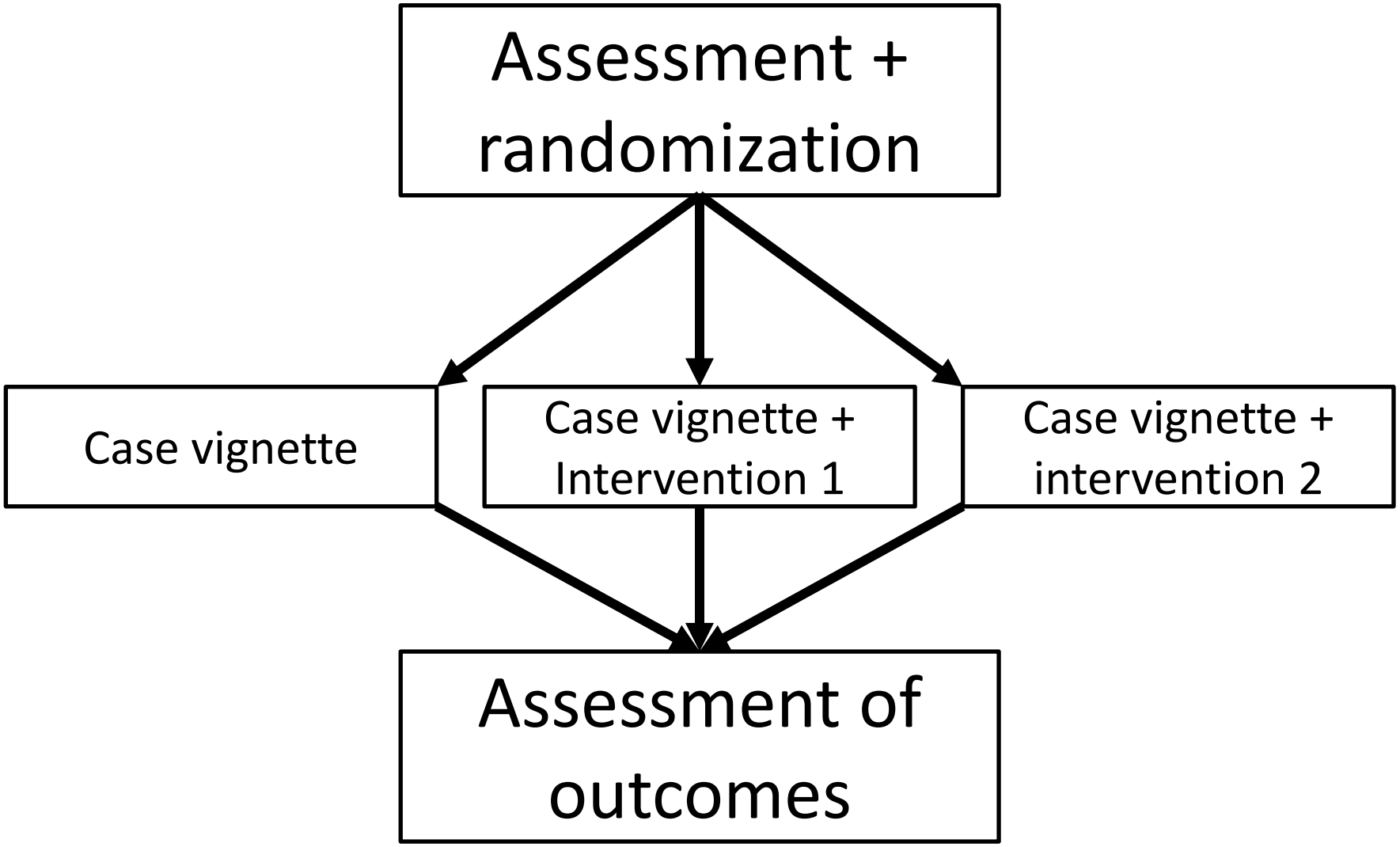
Methods

- ANCOVA, random effects for condition
- Subgroup analyses: separate for each condition

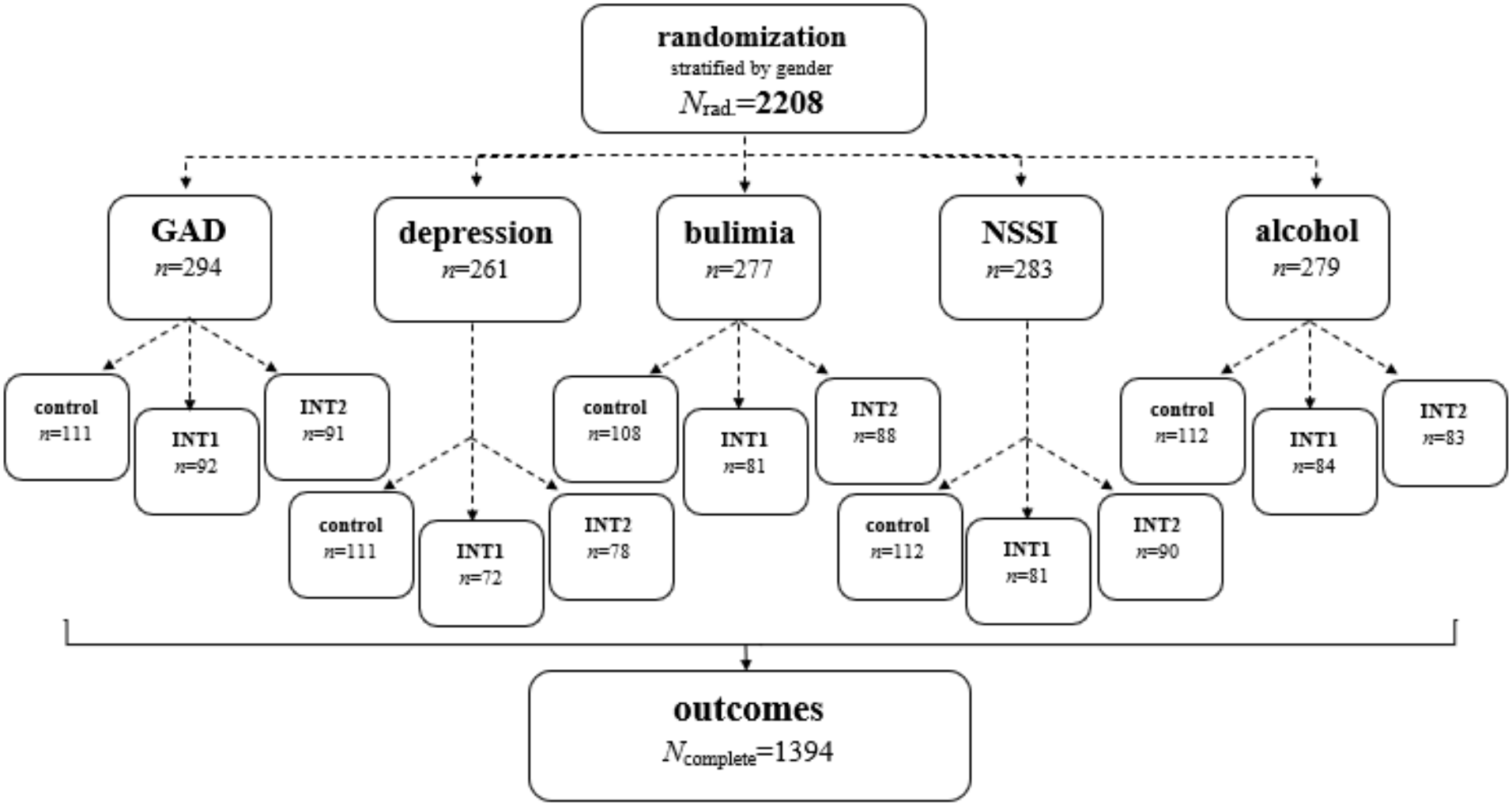
- Primary outcome: potential professional help-seeking (psychologist, psychiatrist)

- Secondary ourcomes: informal help-seeking, stigma, attitudes towards help-seeking

Procedures


Assessment + randomization
Case vignette
Case vignette + Intervention 1
Case vignette + intervention 2
Assessment of outcomes

Flow


randomization
stratified by gender
$N_{rad.}$=2208
GAD
n=294
depression
n=261
bulimia
n=277
NSSI
n=283
alcohol
n=279
control
n=111
INT1
n=92
INT2
n=91
control
n=111
INT1
n=72
INT2
n=78
control
n=108
INT1
n=81
INT2
n=88
control
n=112
INT1
n=81
INT2
n=90
control
n=112
INT1
n=84
INT2
n=83
outcomes
$N_{complete}$=1394

Sample characteristics (N=1394)

		***M* (*SD*) / *n* (%)**
Age	*M* (*SD*)	20.97 (3.67)
Gender	Female	1109 (79.56)
	Male	254 (18.22)
	Diverse	31 (2.22)
Actual help-seeking	None/never	770 (55.24)
	Current	273 (19.58)
	Past	351 (25.18)
Knowing someone with MH issues?	Yes	1285 (92.18)
	No	109 (7.82)
Immigration background		20.8%

Sample characteristics (N=1394)

GAD-7	*M* (*SD*)	8.38 (5.00)
	Minimal/ no anxiety (0-4)	370 (26.54)
	Mild (5-9)	501 (35.94)
	Moderate (10-14)	330 (23.67)
	Severe (≥ 15)	193 (13.85)
PHQ-9	*M* (*SD*)	9.56 (6.07)
	Minimal/ no depression (0-4)	333 (23.89)
	Mild (5-9)	430 (30.85)
	Moderate (10-14)	347 (24.89)
	Moderately severe (15-19)	171 (12.27)
	Severe (≥ 20)	113 (8.11)
WCS	*M* (*SD*)	34.50 (24.65)
	High risk (≥ 57)	273 (19.58)
	Low risk (< 57)	1121 (80.42)
SITBI-G	Lifetime NSSI	479 (34.36)
	12-month NSSI	265 (19.01)
AUDIT-C	*M* (*SD*)	2.51 (2.08)
	Abstinent (0)	319 (22.88)
	Moderate (1-3)	645 (46.27)
	Hazardous (≥ 4)	430 (30.85)

Results – Primary Outcome

	total N=1394	CG n=554	INT1 n=410	INT2 n=430	*F* (2,1385)	*P*	Pairwise comparisons
Potential help-seeking (GHSQ)*							
Professional max. *M (SD)*	4.74 (1.81)	4.65 (1.88)	4.82 (1.74)	4.76 (1.79)	.99	.37	
Informal max. *M (SD)*	**5.86 (1.38)**	**5.87 (1.37)**	**5.73 (1.43)**	**5.95 (1.35)**	**3.75**	**.02**	**INT2 > INT1**
None *M (SD)*	3.07 (2.01)	3.08 (2.02)	3.20 (1.99)	2.94 (2.01)	2.68	.07	

*controlled for age & help-seeking

Results – Secondary Outcomes

Stigma (USS)[b]						
Blame *M (SD)*	**4.47 (.64)**	**4.41 (.68)**	**4.50 (.65)**	**4.50 (.58)**	**3.25**	**.04**	**INT1, INT2 > CG**
Distrust *M (SD)*	**3.94 (.79)**	**3.84 (.79)**	**3.97 (.79)**	**4.02 (.78)**	**8.01**	**<.001**	**INT1, INT2 > CG**
Help-seeking attitudes (IASMHS)						
Psychological Openness *M (SD)*	21.20 (4.82)	21.05 (4.84)	21.65 (4.70)	20.97 (4.89)	1.67	.19	
Help-seeking propensity *M (SD)*	20.95 (5.29)	20.78 (5.41)	21.04 (5.14)	21.09 (5.27)	.48	.62	
Indifference to stigma *M (SD)*	**23.37 (6.31)**	**23.83 (6.06)**	**23.02 (6.51)**	**23.13 (6.40)**	**3.18**	**.04**	**CG > INT1**

*controlled for age & help-seeking

Results – Acceptance & Transportation

Video acceptability and transportation

General likability *M (SD)*	**3.94 (.81)**	**3.85 (.78)**	**4.10 (.79)**	**3.90 (.84)**	**12.20**	**<.001**	**INT1 > CG, INT2**
Comprehensibility *M (SD)*	4.82 (.45)	4.79 (.50)	4.82 (.45)	4.85 (.40)	2.01	.13	
Interestingness *M (SD)*	**3.86 (.96)**	**3.84 (.93)**	**3.98 (.94)**	**3.76 (.99)**	**6.39**	**.002**	**INT1 > CG, INT2**
Transportation (TS-SF) *M (SD)*	**4.49 (1.24)**	**4.53 (1.21)**	**4.58 (1.25)**	**4.37 (1.27)**	**4.23**	**.02**	**CG, INT1 > INT2**

*controlled for age & help-seeking

Conclusion

- Video interventions are a promising mean to facilitate access to care
- Increasing positive outcome expectancies seems especially promising
- YET:
  - Small effects
  - Effects only for INFORMAL help-seeking (& stigma)