What happens online?

Usage of a generic fully-automated web-based self-management intervention for breast cancer survivors

Evaluation and recommendations

SW van den Berg, PhD student
EJ Peters, Dr MFM Gielissen, Prof JB Prins
Radboud University Medical Centre, Nijmegen
Medical Psychology

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Breast cancer in numbers

- 1 in 8 women in the Netherlands develops breast cancer
- 75% curatively treated

ISRII 2013 Dutch Cancer Society 2011

Breast cancer survivorship

- High information need
- 40-49% turns to the Internet
- ±70% breast cancer survivors not indicated for intensive face-to-face therapy
- ✓ Unguided web-based therapeutic interventions

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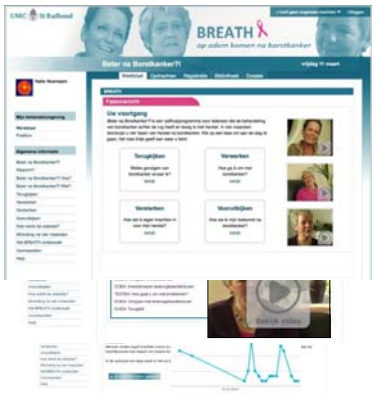
Capiello (2007); Helgeson (2004), Henselmans (2010); Barak (2009)

BREAst cancer e-healTH [BREATH]

- Unguided & fully automated
- Fixed structure based on CBT
- Four phases of recovery (16 weeks)
- Four intervention ingredients (104):
  - Information (26 scripts)
  - Assignments (48 tasks)
  - Assessments (10 tests) and
  - Videos (20 peer modelling clips)



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Van den Berg et al. (BMC Cancer 2012)

BREATH: usage evaluation

- **Aim** = to gain insight in meaningful usage parameters to evaluate usage of generic fully-automated web-based interventions

- **N = 70** (intervention group RCT)
- Women who completed primary curative breast cancer treatment ≥2 and ≤4 months
- High and low distressed women

Mean age	**50.9**	**SD 8.3**
Higher education (≥ 11 years)	35/70	50%
Married or living together	58/70	82.9%
Treatment		
• surgery, chemotherapy and radiotherapy	48/70	68.6%
• hormonal therapy	46/70	65.7%

Methods I - Usage statistics

Usage data retrieval

- User initated acticty → monitoring https-server requests
- Database reads (e.g. logins) + database writes (e.g. adding text)

*'What is the **amount** of usage?'*

Singular usage statistics	
Frequency	number of logins per patient
Duration	
Session duration	time between start and end of one login (minutes)
Total duration	sum of session durations per patient (minutes / hours)
Activity	number of opened ingredients per patient

*'**How** do patients use the intervention?'*

Composite usage statistics
Frequency
Logins per phase
Logins per week
Logins per weekday
Activity
Opened ingredients per phase
Distribution of opened ingredients

Methods II - Usage statistics

*'**How** do patients use the intervention?'*

Other usage statistics	
Distress thermometers	Number completed
Self-help contract	
Opening the self-help contract	Yes / no
Signing the self-help contract	Yes / no
Self-reported usefulness	Useful / not useful / not filled in

Methods III - Definitions

Intervention adherence

- The % of patients who started using the intervention and continued to log in (at least once) during all four phases

  = continuous use = user persistence

Classification of user groups

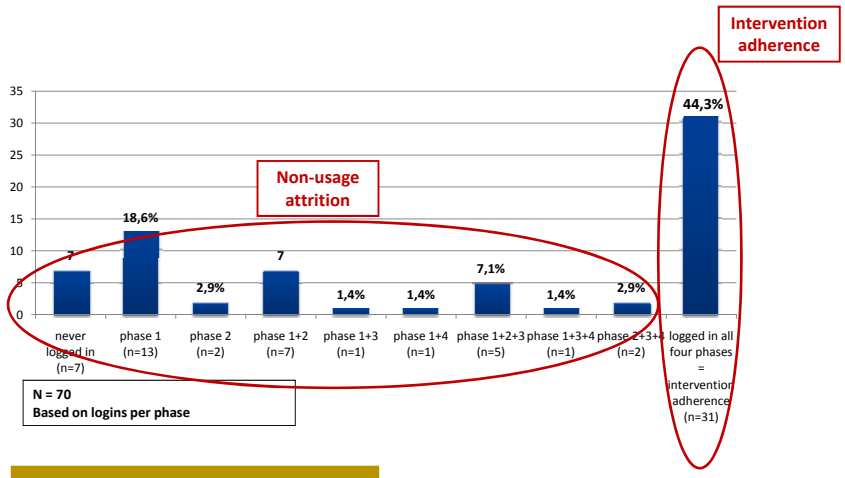
- *intended* usage[1] vs *observed* usage

User groups		**Minimal intended frequency** (total number of logins)	**Minimal intended activity** (total number of opened intervention ingredients)
1	**Non-users**	0	0
2	**Low users**	1 - 9	1 – 51 (<50% all ingredients)
3	**Intended users**	10 – 16	52 – 77 (<75% all ingredients)
4	**High users**	17 – 40	78 – 104 (≥75% all ingredients)

[1]Kelders et al (JMIR 2012)

Results I

Intervention adherence = the % of patients who started using the intervention and continued to log in (at least once) during all four phases



Results II - User groups

*'What was the **amount** of usage?'*

	Non-users (n=9)	Low users (n=30)	High users (n=31)
Frequency	-	**3.6** (SD 2.6)	**20.9** (SD 9.3)*
Duration			
Session (minutes)	-	**23.5** (SD 12.3)	**32.8** (SD 14.4)*
Total (minutes)	-	**81.1** (SD 75.5)	**682.7** (SD 443)* =11.2 hours
Activity	-	**18.8**/104 (SD 17.2)	**94.5**/104 (SD 12.8)*

* $P < 0.01$

** No significant differences between user groups on baseline demographic, medical or distress variables.

Results III - User groups

*'**How** did patients use the intervention?'*

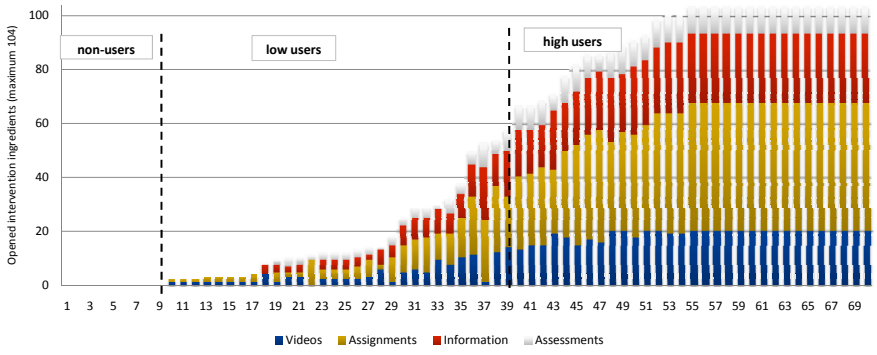
	Low users (n=30)	High users (n=31)
Distress thermometers	**1** (SD 1.5)	**5** (SD 2.5)*
Self-help contract		
opened	**57%** (17/30)	**100%** (31/31)*
signed	**53%** (9/17)	**84%** (26/31)*
Self-reported usefulness (% of opened ingredients)		
useful	**44%** (SD 25%)	**67%** (SD 21%)*
not useful	**21%** (SD 20%)	**18%** (SD 18%)
not filled in	**36%** (SD 29%)	**16%** (SD 17%)*

* P < 0.01

Results III - User groups

*'**How** did patients use the intervention?'*

Distribution of opened intervention ingerdients per participant (n = 70)



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Usage evaluation - Conclusions

BREATH intervention

- 44.3% adherence or continuous use
- Two substantive user groups
- High users:
  - ✓ Exceed intended usage
  - ✓ Opened all intervention ingredients
  - ✓ 70% useful

Generic fully-automated web-based interventions

- Added value of technical usage data = a realistic estimation of exposure to intervention (after tailoring/ opening intervention content)
- ***How*** the website is used is more interesting than ***the amount*** of usage

J.Y. Han et al. (2009; 2011)

Usage evaluation - Recommendations

1. **Record singular** (frequency, duration, activity) **AND composite usage statistics** (e.g. time spent per ingredient, click-patterns, re-opening, span of use).
2. Combine usage statistics with **patient-reported usefulness**
3. **Add qualitative measures** (such as semi-structured telephone interviews or online focus-groups)
4. **Pilot evaluation of usage statistics** as a fixed step of iterative development process
5. **As reseacher**: gain insight in the technical rationale of recorded and non-recorded usage statistics (As ICT-professional: gain basic knowledge on conducting research)

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More …

questions?

s.vandenberg@mps.umcn.nl