

# Brief Communication

## Health Applications for Corporate Health Management

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### Abstract

**Introduction:** Many corporate organizations around the world are looking at new ways to improve the health and well-being of their employees. Many have begun to use m-health approaches and unique applications (apps) to provide assistance. In Germany, both m-health and occupational health management (OHM) are growing quickly. Therefore, we hypothesized that the combination—apps usage in OHM—is growing as well. We studied the usage of health apps in large corporations for health management of employed individuals.

**Methods:** To understand the environment in Germany, a two-part study was conducted. First, an extensive literature search was done and second, interviews were conducted with 12 of the 20 biggest companies' health management representatives.

**Results:** Using key search terms, 5,445 peer-reviewed journal articles traced with German databases and on PubMed were reviewed. Interestingly and somewhat surprising to the authors, none of them covered our specific topic. Interviews were conducted with 60% of the companies indicated. Only 3 out of 12 companies use apps. Four companies are piloting apps. With one exception, apps cover well-known areas such as food coaching, physical motion, smoking cessation, stress prevention, and other health-related subjects. One app used sensors in work clothing to prevent unhealthy motion. With a few exceptions, there has been no evaluation of the utility and utilization of apps.

**Discussion:** Current app usage in corporate health management in Germany is surprisingly low. Apps need to be better evaluated. Main obstacles—which could be resolved in the future—are legal restrictions (especially on data security), the lack of company-owned smart phones, misfit of apps and corporate health strategy, a lack of app evaluation, and high app prices.

**Keywords:** corporate health management, health app, m-health

### Introduction

With the ubiquitous use of m-health worldwide, health applications (apps) have recently seen an increase in utilization. The market for m-health in Germany is expected to grow from €906 M in 2012 to €3 B in 2017.<sup>1</sup> At the same time, companies have increased efforts in corporate health management. In the United States, between 77% and 99% (depending on investigator) of companies employing more than 10,000 employees offer occupational health management (OHM).<sup>2</sup> In Germany, companies are required by law to invest in health protection; in addition, they may offer further services (such as smoking cessation aid). In our sample, all companies offered OHM, which covers both. From there, we hypothesized that the usage of health apps for corporate health management—as a combination of two growing objects—also increases quickly. However, literature provides almost no insight into this topic (as we found in our literature review, see later).

Therefore, occupational health managers operate in an environment of massive uncertainty. Since OHM is an important part of health services—given that millions of people are managed this way—, our study sheds light on this by exploring three issues:

1. Whether corporations embrace health apps as an instrument for improving their corporate health management;
2. The type of apps that are typically applied; and
3. How successful their utilization has been.

Given the lack of previous publications (see next), we decided to do field research by interviewing companies for their experiences. Since big companies maintain bigger corporate health departments (on average), we took the biggest 20 German companies as a starting point (Table 1).

### Methods

To gain an understanding of how apps are being used in Germany, we developed two approaches. First, we performed a literature review to collect current information and to develop a foundation for the second step. Two German medical

**Table 1. The Top 20 Largest Corporations in Germany**

	COMPANY	SECTOR/INDUSTRY	EMPLOYEES
1	Volkswagen AG	Automobile	592,586
2	Deutsche Post DHL Group	Logistics	488,824
3	Schwarz Beteiligungs GmbH	Retail	350,000
4	Siemens AG	Electronics	342,000
5	Edeka	Retail	336,100
6	Rewe Group	Retail, tourism	327,548
7	Deutsche Bahn AG	Transportation	306,966
8	Robert Bosch GmbH	Electronics	290,183
9	Daimler AG	Automobile	279,972
10	Metro AG	Retail	255,033
11	Deutsche Telekom AG	Telecommunications	228,248
12	Fresenius SE & Co. KGaA	Pharma	216,275
13	Continental AG	Automobile	189,168
14	ThyssenKrupp AG	Diverse	160,745
15	Allianz SE	Insurance	147,627
16	Bayer AG	Pharma, chemicals	118,888
17	Deutsche Lufthansa AG	Aviation	118,781
18	BMW AG	Automobile	116,324
19	BASF SE	Chemicals	113,292
20	Bertelsmann SE	Media	112,037
Total			5,090,597

databases were used, Medpilot ([www.medpilot.de](http://www.medpilot.de)) and Livivo ([www.livivo.de](http://www.livivo.de)), and the National Library of Medicine’s PubMed ([www.ncbi.nlm.nih.gov/pubmed/](http://www.ncbi.nlm.nih.gov/pubmed/)), respectively. Search words were Gesundheitsapp, Gesundheitsförderung App, Gesundheitsmanagement App, mHealth apps, and Health promotion app for the German databases, and Health promotion app, Healthcare apps, mHealth apps, Occupational health app, Health promotion app, and Workplace health app for pubmed. Overall, 5,445 papers were retrieved, all of which were checked by title and abstract for a fit with our purpose. In unclear cases, full text was ordered and analyzed. Unfortunately, we could not find any published studies that were directly related to our question (most of the papers retrieved dealt only with one single app without any connection to corporate health management). We could not do a backward search either. However, in the discussion part of this article, we will include papers that do not discuss specific apps (as was required for

inclusion in the research) and also articles that examined Web-based approaches and/or dealt with apps, as such, in corporate health management (see later).

The second step involved contacting the 20 largest German companies (by number of employees), representing ~5 million employees, or 11% of the German workforce. Company rankings as published elsewhere<sup>3</sup> were cross-checked with corporate Web sites (*Table 1*).

All companies were contacted through the office of their CEO whom we asked to identify a company-intern expert for our question; in less than five cases, contact people could be immediately found by an Internet search. All interviewees were informed about the aim of our study and consented to it. We assured them that we would not publish their names. This type of study does not need IRB approval in Germany. A few days before the interview, we sent three key questions to the interviewees:

- (1) Which health apps do you use in your company?
- (2) What were your experiences?
- (3) Which future developments do you see in health apps?

We conducted personal phone interviews, each lasting about 30–60 min. All interviews were carried out in November and December of 2015. The three aforementioned questions served as a guideline that enabled additional questions as appropriate to further shed light on app use.

All interviews were completely transcribed; this transcription was the basis for our semi-quantitative analysis (cf. the Mayring method,<sup>4</sup> adapted).

**Results**

**RESPONSE RATE**

We interviewed experts from 10 companies personally; 2 companies answered our questions in writing. This gives a response ratio of 60%. Eight companies did not want to talk to us nor did they send written comments.

**USAGE OF HEALTH APPS**

Three companies are already using health apps (four apps in total); two out of these plus two other companies are currently doing pilot projects (one each); four companies are in the discussion phase; and three companies do not plan to use health apps.

**TYPES OF HEALTH APPS**

Nine apps were about physical activity, six about smoking cessation and psychic disorders, and three about healthy food. The functions can be further differentiated:

- Three apps provide information for healthy eating by offering recipes and coaching.
- Three apps accompany the smoking cessation by information and coaching.
- Three apps offer information on depression screening and stress prevention.
- Two apps measure the number of steps when walking.
- Two apps allow the coordination and booking of sports facilities (in one case within the company).
- Two apps provide individual coaching with custom priorities on a subject's physical activity, smoking cessation, psychic disorders, and healthy food.
- One app measures moving activities.
- One app provides coaching for office yoga.
- One app provides the monitoring of work-related movements under the use of sensors. In the case of an unhealthy movement, the employee receives an alarm on his cell phone or pager. A feature for employees in cold stores included the monitoring of body temperature.
- Some of the apps have multiple purposes, that is, combined promotion of different lifestyle aspects.

All participating companies confirmed cooperation with health insurance companies regarding corporate health management. In five cases, the exchange resulted from cooperation with related health insurance ("Betriebskrankenkasse (BKK)," companies' own insurance). Although German health insurance offers a variety of health apps and fund's apps, they need to prove quality and efficacy according to social law (SGB V) in Germany—because they need to be safe, efficient, and necessary,<sup>5</sup> only one company used an app that was developed by the related BKK.

#### EXPERIENCES WITH APPS

- In most cases, the experiences of the interviewees relate to personal impressions and not to quality-assured evaluation standards. There were a few exceptions.
- During use of an app for smoking cessation, one company recorded the same success rates as in use of conventional methods in employees finishing the program; however, the dropout rates were recorded as being "significantly" in the app user group, thus limiting its success.
- The piloting of a motion tracker was evaluated by questionnaires. For privacy reasons, no relevant results were obtained by the questionnaires.
- Two companies evaluated the number of downloads. In one case, the anonymous evaluation of the hits on the app was possible.

- Overall, we could not detect any evidence-based evaluation schemes.

#### APP USAGE AND STRUCTURE OF OHM

In our sample, app usage depended heavily on the structure of the respective company and, thus, of its health management. Some companies employ mainly blue-collar workers, whereas others employ information technology personnel; in some companies, most employees use a smartphone as provided by the employer (thus making app usage easier).

#### REASONS FOR AND AGAINST APP USAGE

Our interviewees mentioned several advantages that drive app usage:

- Easy utilization. Three companies confirmed that pedometer motion tracks are easily monitored and analyzed by smartphones; four companies mentioned that wearables are suited to collect motion data.
- Apps are mobile.
- Data can be used anywhere, anytime.
- Data are anonymous, for example, in apps that check for depression or burn-out.
- Apps can be efficient (in one case, smoking cessation via an app was as successful as conventional methods).
- Younger employees like apps.

There are, on the other hand, reasons that hinder app usage.

- There are data security problems; for example, employers are not entitled to use app data for management purposes (nine companies).
- Not all employees have smartphones; companies do not want to invest (seven companies).
- Apps are typically not compatible with other corporate health strategies (four companies).
- Efficiency of apps is not yet demonstrated.
- Apps and related licenses are expensive.
- High-risk groups cannot be reached via apps (only those employees who are already interested in health).
- Some health managers simply do not see a necessity to use apps.
- Apps cannot replace face-to-face intervention.
- In some cases, apps do not work with all smartphone types (e.g., blackberry, windows phone, iOS, android, etc.).

#### FUTURE DEVELOPMENT

Eight companies believe that app usage will increase in the future; younger employees are regular users of smartphones, and apps will be improved over time, thus mitigating current

problems. Three companies think that apps will become a part of lifestyle, but in the area of private life—because corporate health management needs personal contact.

## Discussion

One of the most interesting findings of our study was that only 3 out of 12 of the biggest German companies actually use health apps in corporate health management. Even if one takes into account that another four companies are piloting apps, the acceptance of apps in our sample is moderate—although both apps, as such, and corporate health management, as such, are growing quickly. On the other hand, app usage in a private setting is not very stable over time either but tends to erode quickly.<sup>6</sup>

The apps that are in place are rather well known and deal with lifestyle, healthy food, smoking cessation, and motion. With the exception of wearables tracking sequence of motion, and temperature in cold environments, we could not find any new content. Most apps are also not yet evaluated; that is, little is known about their effectiveness and efficacy, respectively. This fits well to the lack of studies on apps.<sup>7</sup> Since earlier findings on Web-based corporate health management (CHM) tools yielded mixed results, it seems to be even more desirable to measure health app efficacy.<sup>8,9</sup>

Nevertheless, companies expect app usage to increase, mainly due to younger employees used to smartphones and further app development. This fits well to earlier findings on CHM app acceptance within German and Austrian leaders.<sup>10</sup>

Based on our research, app producers should focus on interoperability (especially with existing corporate health management), data security, and price; they also need to prove better outcomes. Gamification might help as well, because it may improve app usage<sup>11</sup>; in one study, participation increased by 80%.<sup>12</sup>

Overall, there seems to be no need for companies to rush into health apps. However, companies should monitor the market for new and better apps, especially if company structure supports smartphone use.

Finally, the lack of literature dealing with health apps in corporate health management is surprising and should change. A register of health apps might help in identifying interesting new developments.

## Conclusion

OHM and health apps are growing quickly in Germany; however, the combination—apps as part of OHM—is not really a “hype.” However, companies should monitor the market for new and better apps, especially if company structure supports smartphone use.

Literature provides very little knowledge on app use in OHM, especially on efficacy and efficiency; few apps have been evaluated yet. This should be changed in the future. A register of apps in OHM might also help health managers in their decision process.

Since the main reasons for slow acceptance are legal issues, the lack of company-owned smart phones, misfit of apps and corporate health strategy, a lack of app evaluation, and high app prices, producers should focus on those whom they can influence.

A limitation of our study is the number of interviewees; further research with an increased number of companies studied is needed. Because of the lack of literature on this topic, we do have only this snapshot in time; future use and adoption of health apps in CHM might well change, creating a need for follow-up evaluation. A further limitation is our focus on Germany. The situation in other European countries may be different and should be studied as well.

## Disclosure Statement

No competing financial interests exist.

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