

Positive Effects of an Escape Room Game on Members of a Pharmacy Department

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INTRODUCTION

Serious gaming is used for purposes other than entertainment, such as teaching and continuing education, and can help to improve knowledge acquisition and to enhance cognitive or technical skills.^{1,2} In recent years, escape games have been increasingly exploited for educational purposes, especially in professional settings and university pharmacy programs.³⁻⁸ In a university pharmacy program, escape rooms can be used for training second- and third-year students to address various clinical situations (e.g., diseases/conditions such as diabetes, cancer, or heart failure; activities such as nonsterile compounding).⁶⁻¹¹ However, to the authors' knowledge, only 2 studies have evaluated the effects of escape games on hospital pharmacists and pharmacy technicians.^{12,13}

In a fun context, escape games allow for the development of essential team skills such as communication, listening, and leadership. To take advantage of this trend, an escape game was created as a special event for the department of pharmacy of the Centre hospitalier de l'Université de Montréal. The goal of this study was to determine whether the activity had any effect on participants' knowledge about their colleagues, their happiness at work, their feeling of belonging to the department, and the translation of skills (communication, listening, logic, leadership, deduction, teamwork) from the game to "real life".

DESCRIPTION OF THE ESCAPE GAME

An escape room game was specially created and set up for members of the pharmacy department of a 772-bed academic hospital. A pharmacy student (A.M.) spent a total of 11 hours writing the scenario, creating the puzzles and riddles, setting up the game materials, and preparing some tests to validate the activity. The escape room used classic mechanisms related to this type of game: chests and 3-digit padlocks, a complex success code, an ultraviolet lamp, and objects to be inserted into specially designed supports.

The game was divided into 5 parts: arrival of participants and determination of the game objective (to open the

nurse's coded computer session in final part of the game); solving the first puzzle to open chest 1; placing petri dishes to open a second room; deciphering symbols (runes and numbers) in a fictitious patient's file to open chest 2; and collecting the 15 pieces of the final puzzle and solving it to get out of the second room (for more detail, see Table 1). The game included elements related to infectious diseases and cardiology to provide a context like that of a hospital. However, the observation and logic challenges were not intended for participants to acquire knowledge about these clinical topics.

In teams of 4, the participants had to solve a series of riddles related to a fictitious medical case within a 25-minute period after a short briefing. Each team was allowed to receive up to 3 clues. The pharmacy student supervised the event for a total of 8.25 hours; supervision consisted of preparing for and monitoring each game and resetting the game rooms after completion of each game. The escape room events took place in the morning or afternoon over a period of 3 days in February 2020. After the activity, participants were asked to complete a written 6-question survey (Table 2).

EVALUATION OF THE ACTIVITY

A total of 51 people participated in the escape room game, representing 20% of the 258 members of the department (pharmacists, technicians, and administrative staff, as well as residents and students). Responses to the questionnaire are shown in Table 2.

The activity was appreciated by all participants, with a mean global appreciation rating of 9.34 on a scale of 1 to 10. All participants stated that they would retry an activity like this at work. The 25-minute escape room experience resulted in a moderate increase in happiness at work and a feeling of belonging to the pharmacy department (reported by 86% and 73% of participants, respectively). Two-thirds (67%) of the participants felt they knew their coworkers better after the escape room game. More than 40% of the players believed they would transfer skills used during the game to their work. Communication, listening,

and logic were the 3 skills most likely to be transferred into professional life (reported by 33%, 24%, and 27% of participants, respectively).

IMPLICATIONS AND SIGNIFICANCE FOR PRACTICE

Over the past decade, escape room games have become more popular for educational purposes in health care, and they have been adapted for undergraduate students in several health care disciplines, such as pharmacy, nursing, and medicine.^{1,14} Outside this context, escape room games are rarely used in health care or professional settings such as hospitals.¹⁵ To the authors' knowledge, this study is the third to describe an escape room exercise involving a population of pharmacists, technicians, and administrative staff in a professional pharmacy environment. Given the heterogeneous population, the objective of this activity was slightly different from escape rooms in educational settings and did not include the transmission of knowledge. The collegial and entertainment nature of the escape room allows employees to build motivation and engagement while developing teamwork and communication.¹⁴ These

activities have been proposed by some private employers for team building among their workers.

In this context, the escape room was offered during work hours to members of our department and students. The activity led to a moderate increase in happiness at work and a feeling of belonging to the pharmacy department for about three-quarters of participants. These 2 factors are important for employee retention, even more so in a pandemic context. Happiness at work affects not only the engagement and satisfaction of individual staff members, but also the patient experience, quality of care, patient safety, and organizational performance.¹⁶

CONCLUSION

In the pharmacy department of an academic centre, an escape room game had a positive impact on participants' knowledge of their coworkers, their happiness at work, their feeling of belonging to the department, and the translation of skills. To our knowledge, this is the first study to show increases in level of happiness at work and the feeling of belonging after participation in an escape room game.

TABLE 1. Parts and Activities of the Escape Game

Part of Game	Activities
1. Briefing, followed by participants' entrance into first room	Start of the game: Pieces of information (notes, a fictitious patient file) are present in the first room to help participants deduce the objective of the game, which was to open the nurse's coded computer session to escape the second room (part 5 of the game, below). The fictitious patient's medical record includes 3 runes (see part 4 of the game, below).
2. Solve the first puzzle to open chest 1	Riddle 1: Street art image representing a heart and a hand, accompanied by numbers, appears on a second computer. Search for hidden clues: Find 3 petri dishes positioned in the first room, with images of 3 bacteria of interest in infectious diseases. Three hidden coloured cubes, each with a fragment related to the street art image, indicate where participants are to place the petri dishes. Solve puzzle 1: Players must deduce the combination of 3 numbers related to the street art image. Open chest 1 with 3-digit padlock: Chest 1 contains 7 Valentine's Day puzzle cards, a small pocket UV lamp (false clue), and one of the missing pages from the patient's medical file (the infectious diseases page, with clues about the petri dishes [i.e., the puzzle of part 3 of the game, below]).
3. Position the petri dishes correctly to open the second room	Riddle 2: Placement of the 3 petri dishes on the 3 coloured cubes according to information on the infectious diseases page of the patient's file. Access to the second room: A visible and audible signal is emitted to participants to notify them that the second room has been opened.
4. Decode symbols (runes and numbers) in the fictitious patient file to open chest 2	Riddle 3: Find the conversion table hidden in the second room, which allows participants to convert the 3 runes into 3 numbers. Open chest 2 with 3-digit padlock: Chest 2 contains 4 Valentine's Day puzzle cards and another missing page from the patient's medical file (the cardiology page).
5. Collect the 15 pieces of the puzzle and solve it to escape from the second room	Collect and complete the puzzle: A total of 15 pieces are hidden in the first room (4), chest 1 (7), and chest 2 (4). Riddle 4: Inscription on 13 of the 15 pieces of the puzzle refers to Tako-tsubo (a fictitious patient illness) and the resolution of the final riddle with the elements of the periodic table (Ta, Co, Ts, B, and O). Riddle 5: Conversion of the 5 elements of the periodic table into a 9-digit code is required to open the nurse's coded computer session and finish the activity.

UV = ultraviolet.

TABLE 2. Results of Questionnaire Distributed to Participants

Question	Staff Pharmacists (n = 17)	Technicians and Administrative Staff (n = 21)	Pharmacy Residents and Students (n = 13)	Total (n = 51)
Q1: Global appreciation of the activity, on a scale of 1 (not appreciated at all) to 10 (appreciated a lot)	9.29 ± 0.92	9.25 ± 0.85	9.46 ± 0.78	9.34 ± 0.85
Q2A: Did this activity increase your happiness at work? (0 = no, 1 = yes)	15 (88)	16 (76)	13 (100)	44 (86)
Q2B: If yes, how would you rate this increase, on a scale of 1 (a little) to 5 (great)?	3.1 ± 1.2	3.6 ± 1.1	4.2 ± 0.7	3.7 ± 1.0
Q3A: Did this activity increase your feeling of belonging to the pharmacy department? (0 = no, 1 = yes)	13 (76)	13 (62)	11 (85)	37 (73)
Q3B: If yes, how would you rate this increase, on a scale 1 (a little) to 5 (great)?	2.6 ± 1.3	3.4 ± 1.0	3.2 ± 1.4	3.1 ± 1.2
Q4: Did this activity increase your knowledge of coworkers? (0 = no, 1 = yes)	9 (53)	16 (76)	9 (69)	34 (67)
Q5: After the activity, did you transfer skills used during the game to your work? ^a				
Communication	2 (12)	9 (43)	6 (46)	17 (33)
Listening	0 (0)	8 (38)	4 (31)	12 (24)
Logic	2 (12)	7 (33)	5 (38)	14 (27)
Leadership	1 (6)	4 (19)	2 (15)	7 (14)
Deduction	1 (6)	5 (24)	3 (23)	9 (18)
Teamwork	0 (0)	2 (10)	0 (0)	2 (4)
Understanding of other co-workers	1 (6)	0 (0)	0 (0)	1 (2)
Absence of skill transfers	14 (82)	11 (52)	5 (38)	30 (59)
Q6: Will you retry an activity like this one at work?	17 (100)	21 (100)	13 (100)	51 (100)

^aRespondents could choose more than 1 option.

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