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Body-pack in sick bodies: a retrospective study of somatic and psychiatric comorbidities among body-packers

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Abstract

Purpose. Body-packing means concealing packets of illicit psychoactive substances in the digestive or genital system. Our study investigated profiles of body-packers and comorbidities associated with body-packing.

Methodology. A retrospective study (2005-2016) was conducted among all patients hospitalized for suspicion of body-packing in the Geneva hospital prison unit (n=287). Data were extracted from medical records and included demographics, somatic/psychiatric diseases, suicidal ideation, and psychological distress.

Findings. Body-packers were mostly young men (mean age=33.4). A total of 42.2% of the participants had at least one psychiatric or somatic comorbidity reported during incarceration (somatic: 28.2%, psychiatric: 18.8%). The most frequent somatic diseases were infectious (10.5%), cardiovascular (10.1%), and endocrinological (4.2%) diseases, and more precisely HIV (4.5%), hepatitis B (3.5%), hepatitis C (1.4%), high blood pressure (8.0%), and diabetes (4.2%). The most frequent psychiatric conditions were substance use disorders (10.5%) and mood disorders (8.0%). Depressed mood/psychological distress and suicidal ideation were frequently reported during hospitalization (27.2%/6.6%). Comorbidities were associated with demographics: Females were more likely to have somatic and psychiatric diseases detected during hospitalization in detention and participants from WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries were more likely to report diseases known before detention.

Value. Body-packers bear a heavy burden of disease and psychological distress. This vulnerable subgroup of incarcerated people has been overlooked in previous research, and their health needs are not correctly understood. This study was a first step to improve their health care and reintegration.

Key-words: body-packing; comorbidity; health; prison.

Body-pack in sick bodies: a retrospective study of somatic and psychiatric comorbidities among body-packers

Drug trafficking is a worldwide problem and several ways of smuggling drugs exist. A common method called “body-packing” refers to the act of swallowing packets of illicit psychoactive substances (usually cocaine, but also heroin, methamphetamine, and cannabinoids) or to insert them in body cavities (McCarron and Wood, 1983). “Body-stuffers” are often drug users/dealers who swallow small amounts of (unwrapped or poorly wrapped) drugs to escape detection by authorities. A breakage or leakage of the packet leads to fatal poisoning, especially if packets are poorly wrapped (June et al., 2000). Therefore, management of body-packers should aim to prevent death or complications (e.g., mechanical obstruction and intoxication) and an intensive care setting is needed (Karkos et al., 2005). Fortunately, only a small proportion of body-packers require intensive care, whereas the others need conservative treatment (Booker et al., 2009, Heymann-Maier et al., 2017, Mandava et al., 2011).

There is an abundant literature on the detection of body-packing and case reports of body-packers’ morbidity and mortality (e.g., Cappelletti et al., 2016, Jalbert et al., 2018, Yamamoto et al., 2016, Beauverd et al., 2011), but little is known on other characteristics of body-packers. Body-packers are likely to be vulnerable individuals with several comorbidities (Luginbühl et al., 2018), but this aspect has been neglected in previous research. In addition, prison entry is associated with an increased risk of acute distress and suicide (Favril et al., 2017, Slade and Edelman, 2014), and body-packers may therefore be at increased risk of suicidal ideation. A case of suicide has been previously reported in the literature (Stichenwirth et al., 2000)..

Therefore, our study aimed to investigate the profiles of body-packers and comorbidities associated with body-packing, including somatic illnesses, psychiatric disorders, and suicidal ideation.

Methods

Design

We conducted a retrospective study including all patients hospitalized for suspicion of body-packing at the Geneva University Hospitals between 2005 and 2016. Patients were hospitalized in the hospital prison unit for somatic diseases. The Geneva University Hospitals ethics committee approved the study protocol (n° 2016-02108).

Participants and procedures

All patients arrested for suspicion of body-packing or body-stuffing who had a positive radiologic exam were eligible for the study's inclusion (n=293). A standard radiography (in 2005) and a low-dose CT scan (since 2006) were used to confirm the ingestion of packets. A total of 287 participants were confirmed as having packets containing psychoactive substances (98.0%) and were included in the subsequent analyses. All patients stayed in the hospital prison unit until all packets were eliminated.

All patients underwent an evaluation at hospital entry, including a detailed history and a physical examination (identical to that of all hospitalized patients in the internal medicine department of Geneva University Hospitals). According to the evaluation of the physician, individualized supplementary assessments could be prescribed, such as infectious diseases or screening for other somatic diseases, as well as specialized somatic and/or psychiatric consultations. Therefore, there was no systematic screening for somatic and psychiatric diseases. In addition, and because of the increased risk of suicide, the medical staff recorded psychological distress and suicidal ideation during hospitalization in the medical prison unit of the Geneva University Hospitals.

Measures

For all participants, information was systematically extracted from numeric medical records. It included demographics (age, gender, and country of origin), somatic/psychiatric diseases, suicidal ideation and psychological distress (i.e., depressed mood). Comorbidities included previously-known diseases and diseases detected during incarceration. Somatic diseases included infectious, cardiovascular, oncological, lung, endocrinological, kidney, gastroenterological, hematological, ophthalmic, dermatological, neurological, and gynecological diseases. Psychiatric conditions included substance use disorders (alcohol, cocaine, heroin, benzodiazepine, and cannabis) and other psychiatric diseases. The presence of complications was also recorded.

Statistical analyses

We first computed descriptive statistics (percentages and mean scores according to the variables' distribution). We compared whether there were differences between known and detected diseases using proportion comparison tests. Then, we performed bivariate analyses (Chi square tests, exact Fisher tests, logistic regressions, and negative binomial regressions) to investigate the relationship between demographics and health-related variables. Analyses were performed with SPSS 25.

Results

The sample included 86.8% of males (n=250) and 13.2% of females (n=33) aged on average 33.4 ± 6.5 years. Most participants came from Sub-Saharan Africa (65.5%), followed by Latin America (17.1%), Western Europe (10.8%), Eastern Europe (5.2%) and North Africa (1.4%)

(see Fig 1). Most of the packets contained cocaine (97.9%). Other substances were amphetamines (n=1), crack (n=1), ecstasy (n=1), hashish (n=2), and heroin (n=1).

A total of 42.2% of participants had at least one comorbidity (somatic or psychiatric, known or detected during incarceration).

Somatic diseases

A total of 28.2% patients had a somatic disease. The prevalence rate of each disease is reported in Table 1 (first panel) and the detailed comorbidities in Supplementary Table 1. The most frequent were infectious diseases (10.5% of the participants had at least one infectious disease) and cardiovascular diseases (10.1% of the participants had at least one cardiovascular disease). The most common infectious diseases were blood borne diseases: HIV (n=13, 4.5%), hepatitis B (n=10, 3.5%), and hepatitis C (n=4, 1.4%). For HIV, 3.2% (7/188) of patients originating from sub-Saharan Africa were positive, compared to 1.0% (1/99) among those from other regions. In total, 48.1% of patients (13/27) were unaware of their blood borne diseases before detention. The most common cardiovascular disease was high blood pressure (n=23, 8.0%). A total of 5.5% (14/255) of patients aged 18 to 44 had high blood pressure, 28.1% (9/32) of those aged 45 to 56 ($p<.001$). The third most common somatic diseases were endocrinological diseases with n=12 (4.2%) having diabetes. In total, 2.7% (7/255) of patients aged 18 to 44 had diabetes, rising to 15.6% (5/32) of those aged 45 to 56 ($p=0.010$). Respectively 34.8% (8/23) and 41.7% (5/12) of patients were unaware of their diagnosis of high blood pressure and diabetes before detention. Four patients had at least one organ damaged resulting from high blood pressure: one case of left ventricular hypertrophy, one case of left ventricular hypertrophy and hypertensive renal failure, one aortic aneurysm, and one case of left ventricular hypertrophy, hypertensive renal failure, and hypertensive retinopathy. Three patients had organ damage related to diabetes: one case of diabetic retinopathy and two cases

of microalbuminuria. All patients were unaware of their high blood pressure and diabetes related organ damage before detention. Other serious but treatable diseases not known prior to detention were identified, including one case of kidney cancer incidentally detected (CT-scanner), as well as heart and lung pathologies (see Supplementary Table 1). Gynecological diseases were more frequently detected during detention than previously known by participants ($p=.044$), but participants were aware of their neurological diseases before detention ($p=.008$).

Psychiatric conditions

A total of 18.8% of the participants had psychiatric conditions (as reported in the second panel of Table 1), with 10.5% participants having a substance use disorder (including polydrug: $n=18$, 6.3%; alcohol: $n=12$, 4.2%; and cocaine: $n=6$, 2.1%). Other psychiatric conditions (9.4% of the participants) included mood disorders ($n=23$, 8.0%), often with suicidal ideation. Other psychiatric disorders were very rare: psychosis ($n=2$) and borderline personality disorder ($n=1$). Participants knew they had a substance use disorder before incarceration (few cases detected during detention, $p<.001$), but other psychiatric diseases were more often detected during detention ($p<.001$).

A notable proportion of participants presented a depressed mood/psychological distress (27.2%, $n=78$) and suicidal ideation (6.6%, $n=19$) during hospitalization (not reported in Table 1). A patient committed suicide during hospitalization. He re-ingested the content of a cocaine packet.

Complications

A total of 7.0% ($n=20$) had complications related to body-packing, including mechanical obstruction ($n=7$), intoxication ($n=7$), acute kidney failure ($n=4$), and gynecologic infection

(n=2). Nobody died from body-packing complications, but two patients had a partial rupture of the packets which needed a surgical intervention to avoid a fatal outcome.

Associations of diseases with covariates

Bivariate analyses are reported in Table 2. Overall, the region of origin was associated with the presence of comorbidities: participants from WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries reported known diseases more often (somatic: 35.5%, $p=.031$; psychiatric: 29.0%, $p=.001$) in comparison with participants from other regions. In contrast, there were no significant differences for diseases detected during incarceration according to the region of origin (somatic: $p=.541$ and psychiatric: $p=.348$). Females were more likely to have new diseases detected during incarceration in comparison with males (somatic: 29.0% for females and 15.7% for males; psychiatric: 23.7% for females and 8.0% for males). However, there were no significant differences for known diseases. Ageing was associated with an increased number of somatic diseases (known: odd-ratio [OR]=1.09, $p<.001$; detected: OR=1.05, $p=.003$), but not with an increased number of psychiatric diseases (known: OR=1.00, $p=.980$; detected: OR=0.93, $p=.006$).

Psychological distress and suicidal ideation were associated with gender, females being more likely to report psychological distress and suicidal ideation in comparison with males (e.g., for suicidal ideation, 18.4% of females and 4.8% of males). There was almost no difference according to the region of origin, except between Sub-Saharan African and Latin American for psychological distress (pairwise comparisons not reported in Table 2). Ageing was associated with a decreased probability of reporting psychological distress (OR=0.96, $p=.012$) and suicidal ideation (OR=0.60, $p=.033$). Finally, complications were not associated with any socio-demographic variable.

Discussion

This study investigated profiles of body-packers and comorbidities associated with body-packing. Body-packers were mostly young men, and two third originated from Sub-Saharan Africa. Overall, the findings showed that body-packers had a large range of comorbidities, including somatic and psychiatric diseases. A total of 42.2% had at least one psychiatric or somatic comorbidity reported during incarceration, at an early age (on average 33.4). This burden of disease mostly included infectious diseases, cardiovascular diseases, substance use disorders, and depression. These results are in line with a recent case report describing body-packers as a vulnerable population with several comorbidities (Luginbühl et al., 2018).

Somatic diseases

The most common somatic problems were infectious diseases and cardiovascular diseases. Several studies highlighted the high prevalence rates of infectious diseases among people living in detention, including hepatitis B and C (e.g., for Switzerland: Chacowry Pala et al., 2018, Gétaz et al.). Among our sample of body-packers, and compared to the general population, the prevalence rate of HIV (4.5%) was 23 times higher (0.2%) (Kohler et al., 2015), the prevalence rate of chronic hepatitis B (3.5%) 19 times higher (0.18%) (OCSTAT, 2015), and the prevalence rate of hepatitis C (1.4%) two times higher (0.71%) (Sakem et al., 2016). The HIV prevalence rate was higher than in the general population in Switzerland, but also than those living in detention (prevalence rate = 0.4% in Geneva) (Chacowry Pala et al., 2018). This high prevalence rate was probably correlated with the region of origin of the patients since body-packers from sub-Saharan Africa were overrepresented in our sample. Among those participants, 3.2% were HIV positive, three times higher than those from other regions. This difference has already been observed in Switzerland among people in detention from sub-Saharan countries (prevalence rate = 3.5%), who contracted the virus in their countries of

origin, characterized by high endemicity, before their migration process (Da Silva Santos et al., 2018).

Regarding cardiovascular and endocrinological diseases, body-packers often had high blood pressure and diabetes, even though they were young on average. A non-negligible proportion already had organ damage, which might indicate lack of access to health care in the community (Kulkarni et al., 2010) and premature ageing (Kouyoumdjian et al., 2017). Indeed, in Switzerland, the prevalence of diabetes in the community is 1% and 3.4% in the age groups 18 to 44 and 45 to 55, respectively (OFS, 2013). In the study population, these prevalence rates were respectively three- to 4.5-fold higher. Furthermore, the prevalence rates of both hypertension and diabetes in this body-packer population were 3.5-fold higher than in the Swiss prison population with a similar average age (Wolff et al., 2011). In addition, an important proportion of participants were not aware that they had the diseases detected during detention. This indicated a lack of access to primary care before incarceration.

Therefore, body-packers had more somatic diseases than the prison population in general, suggesting that negative social determinants of health could be overrepresented within this group. This data confirmed that prison constitutes an opportunity to screen for diseases, but also underlined the need to ensure continuity of care after release.

Psychiatric conditions

The most common psychiatric conditions included substance use disorders and mood disorders with suicidal ideation. The prevalence rate of substance use disorders (10.5%) seemed lower than in the whole incarcerated population (pooled prevalence estimate = 24%, Fazel et al., 2017, Eytan et al., 2011). An explanation may be that drug dealers hire body-packers who are

not substance-dependent to smuggle drugs. This may also explain why psychiatric comorbidities (and especially externalizing disorders) had low prevalence rates in our sample. Indeed, people with severe psychiatric illnesses would not be reliable drug smugglers. Mood disorders were the most frequent psychiatric conditions (8.0%), with a similar prevalence rate as in the whole incarcerated population (pooled prevalence estimate = 10.2% among males and 14.1% among females, Fazel and Seewald, 2012). Psychiatric disorders (excepted substance use disorders) were more likely to be detected during incarceration rather than being known before. This might be because arrest can lead to ‘reactive’ depression.

In addition, body-packers were likely to present depressed mood/psychological distress (27.2%) and suicidal ideation (6.6%). Acute distress and risk of suicide are high at prison entry (Favril et al., 2017, Slade and Edelman, 2014), and previous findings suggested that body-packers were at risk for suicidal ideation (Stichenwirth et al., 2000). However, the study was unable to identify the reasons why body-packers experienced psychological distress from our data. It might be due to the acute distress of prison entry and being caught, but also fear of legal consequences, or even fear of retaliation from drug traffickers. Moreover, we note that people who agree to carry drugs by internal concealment often have difficult social situations, with an urgent need of money for a family member (e.g., debts), either for medical care or for studies (unpublished clinical observations). The arrest might accentuate the psychosocial distress because of these reasons. More importantly, body-packers have an opportunity to commit suicide, by re-ingesting packets. The detention and medical staff should be aware of that risk and measures are needed to prevent suicide of body-packers. In our study sample, body-packers presenting suicidal ideation were quickly transferred to a psychiatric unit. In spite of this procedure, one person committed suicide during incarceration.

Complications

In total, 7% of patients presented complications related to body-packing and no fatal issue related to complication was reported. Therefore, the conservative treatment of body-packing and medical monitoring of potential complications appears efficient. This result is in line with recent studies reporting low prevalence rates of complications, including Switzerland (Heymann-Maier et al., 2017).

Disease and demographic variables

Known and detected diseases varied according to demographic variables, and thus provided an overview of potential risk factors for health. First, ageing was associated with a higher number of somatic diseases, which was not a surprising result and in line with what happens in the general population. Ageing is a growing concern in prison health (Wangmo et al., 2015). Females were more likely to have new diseases detected during incarceration. This meant that females had more often unknown (somatic and psychiatric) diseases than men. In prison, females have been described as shared a heavier burden in disease than males (Binswanger et al., 2010). Participants from Western Europe were more likely to know they had (somatic and psychiatric) diseases than participants from other regions.

Limitations

This study has some limitations. The main one was that somatic diseases and psychiatric conditions were not screened systematically. Our prevalence rates relied on diseases already known by participants and those detected by physicians and psychiatrists. We believe that we identified the most important diseases, but the study probably missed some diseases with silent symptoms. Therefore, the prevalence rates of somatic diseases and psychiatric conditions may

be underestimated. Second, this study had a retrospective design and therefore it missed some important variables not included in the medical charts, such as socioeconomical status. However, this study is the first to provide an overview of the somatic and psychiatric diseases of body-packers and therefore constitutes a first step to improve the health care of body-packers. Indeed, adequate and timely health care is related to better outcomes, for example lower levels of recidivism (Baggio et al., 2019, Fu et al., 2013). Therefore, identifying the health needs of this specific group of vulnerable prisoners is important as it facilitates the planning of adapted health care. Finally, we could not compare this subgroup of prisoners to the general prison population, as we did not have access to matched group of prisoners, with the same variables, who were not body-packers. However, the health of the general prison population is well-documented, which allowed us to interpret our findings in line with those of previous (Swiss) studies. Future studies should build upon our findings and use a case-control design to compare body-packers to the general prison population and thus achieve a better understanding of their health needs.

Conclusion

The somatic and mental health of body-packers has been overlooked in previous research. Indeed, most studies focused on medico-legal issues such as packaging methods, identification of body-packing and management of body-packers. Our study showed that body-packers bear a heavy burden of disease and psychological distress. The whole incarcerated population has received much attention in public health research, and the subgroup of body-packers should not be neglected. Therefore, we call for further studies to investigate socio-demographic characteristics and health issues of this vulnerable population in order to improve their health care and reintegration in the society.

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Figure 1: Flowchart

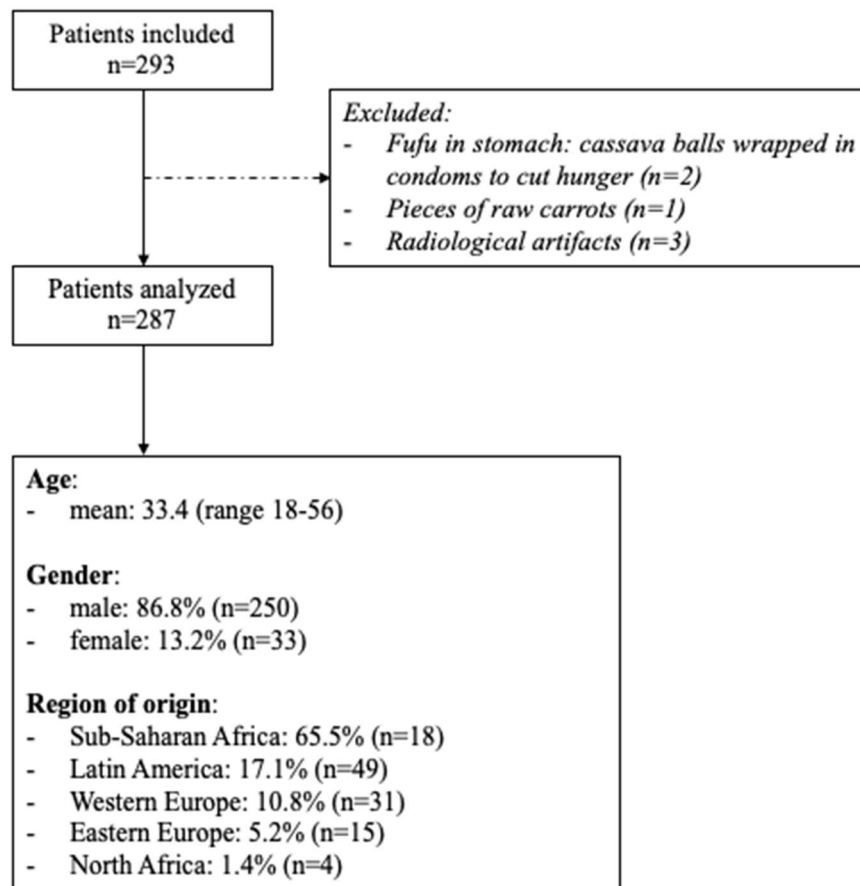


Table 1. Prevalence rates of somatic and psychiatric diseases among body-packers

Diseases (% , n)		Known before detention	Detected during hospitalization in detention	Total	p ¹
Somatic diseases	Infectious diseases	4.5 (13)	6.3 (18)	10.5 (30)	.358
	Cardiovascular diseases	5.6 (16)	5.2 (15)	10.1 (29)	.857
	Oncological diseases	0.7 (2)	0.7 (2)	1.4 (4)	1
	Lung diseases	0.3 (1)	1.0 (3)	1.4 (4)	.317
	Endocrinological diseases	3.1 (9)	1.7 (5)	4.9 (14)	.280
	Kidney diseases	0.3 (1)	1.7 (5)	2.1 (6)	.101
	Gastroenterological diseases	1.0 (3)	1.0 (3)	2.1 (6)	1
	Hematological diseases	0.7 (2)	2.8 (8)	3.1 (9)	.056
	Ophthalmic diseases	0.3 (1)	1.0 (3)	1.4 (4)	.317
	Dermatological diseases	0.7 (2)	0.3 (1)	1.0 (3)	.562
	Neurological diseases	2.4 (7)	0.0 (0)	2.4 (7)	.008
	Gynecological diseases	0.0 (0)	1.4 (4)	1.4 (4)	.044
	At least one somatic disease	16.4 (47)	17.4 (50)	28.2 (81)	.741
Psychiatric conditions	Substance use disorders	8.7 (25)	1.7 (5)	10.5 (30)	<.001
	Other psychiatric diseases	1.4 (4)	8.4 (24)	9.4 (27)	<.001
At least one psychiatric condition		10.1 (29)	10.1 (29)	18.8 (54)	1
At least on somatic disease/psychiatric condition		24.0 (69)	27.2 (78)	42.2 (121)	.390

¹ Proportion comparison test.

Table 2. Associations of participants' characteristics with health-related variables

	Somatic comorbidities known before detention		Psychiatric comorbidities known before detention		Detected somatic comorbidities		Detected psychiatric comorbidities		Depressed mood		Suicidal ideation		Complications		No. of hospitalizations	
	n (%)	p	n (%)	p	n (%)	p	n (%)	p	n (%)	p	n (%)	p	n (%)	p	mean	p
Gender ^a																
Female	10 (26.3)	.075	4 (10.5)	.555 ^b	11 (29.0)	.044 ^b	9 (23.7)	.003	18 (47.4)	.003	7 (18.4)	.002	5 (13.2)	.108	8.7	ref.
Male	37 (14.9)		25 (10.1)		39 (15.7)		20 (8.0)		60 (24.1)		12 (4.8)		15 (6.0)		6.2	.002 ^c
Region of origin ^a																
Sub-Saharan Africa	28 (14.9)	.031 ^b	11 (5.9)	.001 ^b	33 (17.6)	.541 ^b	16 (8.5)	.348 ^b	42 (22.3)	.044 ^b	8 (4.3)	.056 ^b	13 (6.9)	.687 ^b	6.2	ref.
Eastern Europe	1 (6.7)		2 (13.3)		1 (6.7)		2 (13.3)		6 (40.0)		1 (6.7)		0 (0)		6.3	.938 ^c
Latin America	6 (12.2)		6 (12.2)		11 (22.5)		8 (16.3)		19 (38.8)		7 (14.3)		5 (10.2)		7.5	.072 ^c
Western Europe	11 (35.5)		9 (29.0)		4 (17.3)		3 (9.7)		11 (35.5)		3 (9.7)		2 (6.5)		7.4	.155 ^c
Age ^d (odd ratio)	1.09	<.001	1.00	.980	1.05	.003	0.93	.006	0.96	.012	0.60	.033	0.98	.521	0.01	.120 ^c

^a Chi-square test, ^b Fisher exact test, ^c Negative binomial regression, ^d Logistic regression.

North Africa was excluded from the bivariate associations because of its low sample size (n=4).

Supplementary table 1: somatic and psychiatric diseases among body-packers

	Known before detention	Detected during hospitalization in detention
Infectious diseases	HIV (7), chronic HBV (6), HCV (1) (including 1 coinfection HIV-HBV)	HIV (6), chronic HBV (4), HCV (3), active tuberculosis (2), pneumocystis jiroveci (1), strongyloidiasis (1), schistosomiasis (1), toxocariasis (1), chlamydia trachomatis (1)
Cardiovascular diseases	HBP (15), mitral insufficiency (1)	HBP (8), left ventricular hypertrophy (4), severe pulmonary stenosis with right ventricular hypertrophy (1), aortic aneurysm (1), congenital left ventricular non compaction (1), mitral insufficiency (1), RBBB and bradycardia (1)
Oncological diseases	Renal carcinoma (1), high-grade cervical dysplasia (1),	Clear cell kidney carcinoma (1), monoclonal gammopathy (1)
Lung diseases	Asthma (1)	idiopathic pulmonary fibrosis (1), sarcoidosis (1), SAS (1)
Endocrinological diseases	Diabetes (7), pituitary macroadenoma (1), pituitary insufficiency (1)	Diabetes (5)
Kidney diseases	Hypertensive renal failure (1)	Hypertensive renal failure (2), microalbuminuria (2), lithiasis (1)
Gastroenterological diseases	Gastric ulcer (2), GERD (1)	Gastric ulcer (1), vesicular lithiasis (1), large splenic cyst (1)
Hematological diseases	Drepanocytosis (1), anemia- vitamin B12 deficiency (1)	Anemia (8)
Ophthalmic diseases	Unilateral blindness (1)	Diabetic retinopathy (1), hypertensive retinopathy (1), glaucoma (1)
Dermatological diseases	Eczema (2)	Lichen planus (1)
Neurological diseases	Migraine (4), epilepsy (1), sequelae of stroke (1), symptomatic narrow cervical canal (1)	
Gynecological diseases	-	Ovarian hemorrhagic cyst (1), polycystic ovary syndrome (1), pregnancy (2)
Psychiatric diseases	Substance use disorders (25), depressive disorder (3), mood disorder (1)	Substance use disorders (3), psychosis (2), borderline disorder (1), mood disorder with suicidal ideation (19).

